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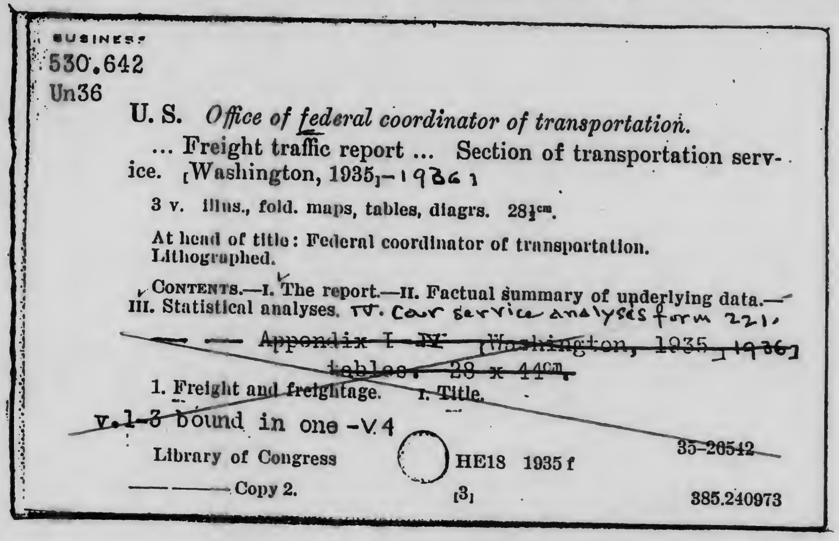

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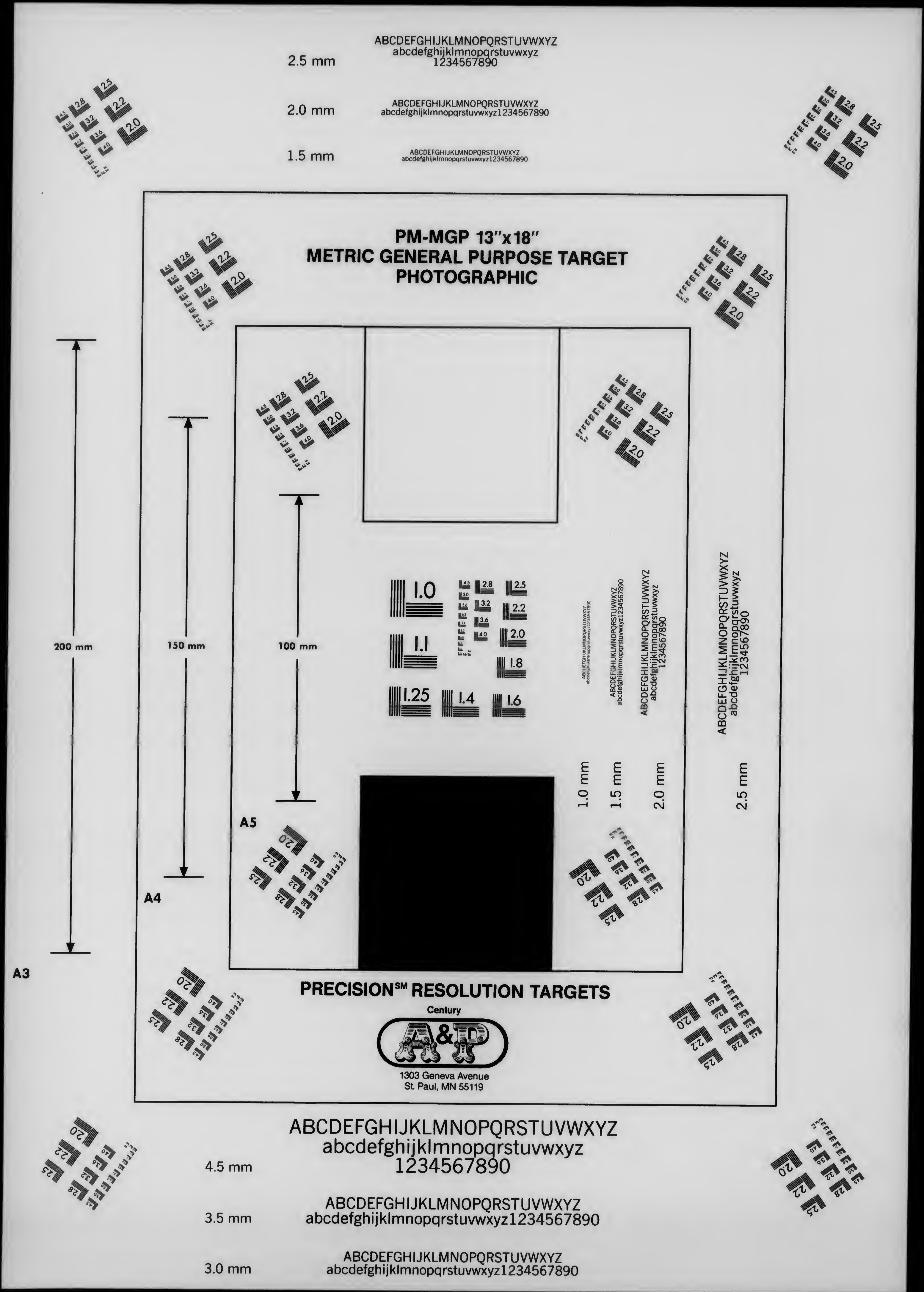

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FEDERAL COORDINATOR OF TRANSPORTATION

FREIGHT TRAFFIC REPORT

THE REPORT

VOLUME I

Section of Transportation Service

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TABLE OF CONTENTS

Page

VOLUME I

Transmittal Letters
- To The Regional Coordinating Committees 5
- To The Coordinator 7

Acknowledgments 8

Freight Traffic Report
- Summary 9
- The Report 15

VOLUME II

Explanatory Note 3

Topical Index 5

Glossary 11

Factual Summary of Underlying Data 31

VOLUME III

Territorial Map 3

Trade Area Map 5

Equigraphic Rate Blocks 7

List of Statistical Analyses 9

Statistical Analyses 17

FEDERAL COORDINATOR OF TRANSPORTATION
WASHINGTON

JOSEPH B. EASTMAN
COORDINATOR

May 6, 1935

TO THE CARRIERS' REGIONAL COORDINATING COMMITTEES:

I transmit herewith, for your consideration, a report on Freight Traffic, prepared by my Section of Transportation Service, under the direction of Mr. J. R. Turney. It covers all such traffic, except the so-called merchandise traffic, which has been covered in a previous report. Not only the freight traffic handled by the railroads is included, but also that handled by the water carriers, the highway carriers, and the pipe lines.

The report is the result of a study which undertook to get the basic, fundamental facts in regard to this traffic, including the unit costs of every phase of operations, the character of service furnished and equipment used, the rates charged, and the extent to which present methods and practices are or are not well suited to modern commercial needs and competitive transportation conditions. These facts have been obtained, not only for the railroads, but for the other forms of transportation, so that comparisons can be made. Such information has never hitherto been assembled with anything like the same degree of completeness, and most of it has not been available at all.

In my judgment, the Section has done an extraordinary piece of work in gathering and analyzing these data, and it has involved constant, unremitting labor in which regular hours of service have been completely disregarded. The information has been obtained from the railroads, the other transportation agencies, shippers, and manufacturers, and they also have devoted a great amount of time and labor to it. For this hearty cooperation I am most grateful.

All conclusions and suggestions in this report are based on this underlying factual survey. They have not been drawn out of the air, but have been derived from the facts and statistics which have been assembled. The supporting data are indicated in great detail.

Some of these conclusions and suggestions will be regarded as radical or revolutionary, and I anticipate that they will be received with skepticism. That is a normal attitude, and an entirely appropriate one, so long as the skepticism is open-minded. The matters dealt with in the report are of such vast scope and importance that definite recommendations with respect to changes in present methods and practices, from me or from my Section of Transportation Service, would not be justified at this stage nor until the data have been reviewed by others. We offer, therefore, not recommendations but suggestions.

For my own part, I express for the present only the conviction that modern commercial needs and competitive transportation conditions imperatively demand a thorough reexamination of the operating methods of the railroads, of their service and equipment, and of their rate structure. If the report herewith submitted demonstrates nothing else, it demonstrates this. I believe that the need for many comprehensive changes will be found. The report and the data which accompany it will, I am confident, be of great value in such a reexamination.

Joseph B. Eastman

FEDERAL COORDINATOR OF TRANSPORTATION
SECTION OF TRANSPORTATION SERVICE
WASHINGTON

J. R. TURNEY,
DIRECTOR

May 1, 1935

MEMORANDUM TO THE COORDINATOR:

Herewith is the Section's Freight Traffic Report. This report has been compiled in four distinct stages. The primary step was the mechanical tabulation in detail of the underlying data. These tabulations are contained in two volumes of appendices which will be transmitted to you shortly.

The second step was the statistical analysis of these tabulations, the results of which are contained in Volume III of the Report, entitled "Statistical Analyses".

The third step was the textual summary of the more salient facts revealed in the statistical analyses, the results of which are stated in Volume II of the Report, entitled "Factual Summary of Underlying Data".

The fourth and final step was a statement of the ultimate facts found and conclusions with respect thereto. These comprise the report proper and will be found in Volume I, herewith transmitted.

To facilitate consideration and limit the necessity for explanatory matter, in the report proper, the Factual Summary and Statistical Analyses are integrated with the Report under a single outline, with the same topic treated in each case under a single system of numeration. This makes it possible to check the statements to the degree desired by each reader.

The ultimate facts or conclusions are stated in the report proper. The evidence upon which they rest is recapitulated under the same section number in the Factual Summary, and the statistical data from which the evidence was drawn are in turn shown, still under the same section number, in the Statistical Analyses.

The conclusions stated are those of the Section reached after consideration of the data. The volume and scope of the surveys make it impossible for any one to speak with finality. For this reason the Report is intended to provoke consideration of the basic data and their implications, and to point the need for a planned program over a period of years, and to suggest rather than to define that program.

JRTurney

ACKNOWLEDGMENTS

The Section acknowledges with the deepest appreciation the efforts of the many organizations and individuals who have cooperated in making the Report possible. They are so numerous that it is not feasible to name them all. The Report, however, would be deficient without special mention of appreciation of the cooperation of thousands of shippers and industrial traffic men who, at great expenditure of time and money, compiled and furnished information with respect to their shipments; to the railway, waterway, pipe line and highway carriers who supplied data concerning their operations which were essential to the report and which could only be compiled by them; and to the large number of manufacturers of transportation equipment who in many cases made special engineering studies.

Railway companies loaned the services of many of their officers whose advice and assistance were invaluable. In this category are O. J. Rider of the Baltimore and Ohio Railroad, C. C. Kirk of the Pennsylvania Railroad, F. J. Ginn of the Chesapeake and Ohio Railway, H. E. Coverston of the New York Central Railroad, G. W. Lamb of the Atlantic Coast Line Railroad, J. P. Latz of the Missouri Pacific Railroad, W. T. Peyton of the Missouri-Kansas-Texas Railroad Company, E. F. Saur of the Pennsylvania Railroad, Glenn F. Vivian of the Chicago, Milwaukee, St. Paul and Pacific Railroad, and Kirby M. Post of the Cotton Belt Route.

Acknowledgment of highly valuable assistance is also due the several Bureaus of the Commission and particularly to Dr. M. O. Lorenz, Messrs. B. T. Elmore and G. A. Casey of the Bureau of Statistics, C. G. Jensen of the Bureau of Traffic, and F. P. Pfahler of the Bureau of Service.

The Section is particularly grateful also for advice which it received from Dr. Charles L. Raper of Syracuse University and Mr. Kent T. Healy of Yale University.

Acknowledgment is also due for assistance received from Mr. John L. Rogers, Executive Assistant, and to the Sections of Regional Coordination, Car Pooling, Research, Purchases and Labor.

Data with respect to waterlines were analyzed and compiled under the direction of Messrs. Walter Bockstahler, A. E. Baylis and R. W. Engle; with respect to rail carriers, under the direction of Mr. Merle J. Reynolds; and with respect to pipe lines by Dr. G. Lloyd Wilson. A general summarization of the data underlying these studies was made under the direction of Mr. Arthur F. White. The field terminal trucking study and study of modern freight vehicles were made under the direction of Mr. Robert C. King, and the motive power survey and report were largely the work of Mr. A. B. Cole. These men were members of this Section. The analysis of over-the-road trucking costs was made by Mr. Warner C. Tufts, Section of Research.

The foregoing, however, would be incomplete without acknowledgment of the loyal and efficient service rendered by all the employees, not only of this Section, but the Stenographic and Statistical Sections, all of which was cheerfully done, and in some cases without compensation.

SUMMARY

THE TRAFFIC

I UNDERLYING SURVEYS The report is the result of concurrent surveys of freight transport operations of all types of carriers. It assembles traffic, service, charge, and operative data, essential to design a coordinated system of transport, utilizing all types of facilities and agencies. (Page 15)

II PROFITABILITY OF FREIGHT SERVICE Freight transport tends to become unprofitable because of a surplus of facilities, competitive ratemaking and service, and utilization of obsolete equipment, plant and methods as well as less economical modes of transportation. (Page 16)

III FREIGHT VOLUME It appears unlikely that increased production within the immediate future will provide a volume of carrier freight traffic as large as that which existed prior to 1930. This is true because of the relocation and decentralization in industry, change in power and fuels, and increase of private transportation. (Page 18)

IV FREIGHT TRAFFIC MARKETS The bulk of American traffic is produced in small towns but principally consumed in large cities. Basic materials are produced in the South and West and processed and largely consumed in the East. (Page 18)

V FREIGHT COMMERCE American commerce has definitely assumed a national aspect. This development requires subordination of provincial to national considerations in dealing with carrier relations, facilities, operations and charges. (Page 19)

THE SERVICE

VI ELEMENTS OF TRANSPORTATION SERVICE Modern business demands celerity in movement, universal door-to-door service and equipment adapted to business needs. (Page 23)

VII TRANSPORTATION SPEED The potential superiority of the railway, resulting from its road speed, is dissipated by voluntary restrictions, infrequent schedules, and frequent yardings and interchanges. As a result, a large volume of carload traffic now moves by highway. (Page 23)

VIII COMPLETENESS OF TRANSPORTATION SERVICE Equipment is now available whereby rail and water carriers can render complete service to all patrons economically. (Page 24)

IX SCHEDULE CORRELATION The motor vehicle is superior in its ability to synchronize its schedules with the patron's needs. Rail and water carriers are handicapped by a limited number of schedules, and by operation of parallel schedules for competitive reasons. Rail carriers have it within their power to reduce, if not to overcome, this handicap. (Page 25)

X ADAPTNESS Carriers can reduce substantially the shipper's cost of transportation by providing vehicles which are shock-proofed to reduce packing, fitted with economical temperature control apparatus, and constructed to facilitate cheap loading and unloading. (Page 26)

THE CHARGES

XI ELEMENTS OF FREIGHT CHARGES The present system of freight transport charges should be reorganized to meet conditions, which have resulted from the ability of the shipper to provide his own transportation. (Page 29)

XII FREIGHT TRAFFIC SALES UNIT The present carlot sales unit and minimum weight requirement are no longer adapted to commercial needs, are conducive to uneconomical loading, and tend to divert cargo shipments from the railways. The price scale should vary with the size of shipment, from a ton to a train load, permitting shipments in any amount, but creating an incentive for full instead of minimum loading. (Page 30)

XIII FREIGHT COMMODITY CLASSIFICATION Modern conditions require that all commodities be classified objectively into a limited number of groups, according to nature, utility and state of processing, and that such groups be rated solely with respect to their potentialities to produce the maximum volume of profitable traffic, excluding consideration of cost characteristics. (Page 31)

XIV PRICE LEVEL The present level of railway rates generally is higher than that of other carriers, and in many cases exceeds the cost to the shipper of providing his own transportation. To assure efficient and stable service, the price level should be designed to make transportation profitable. (Page 34)

XV PRICE STRUCTURE The data indicate that different carrier rate structures, in different territories, are no longer justified by present conditions. To avoid discrimination among shippers and uneconomic distribution of traffic between carriers, the present rate structure should be readjusted to evaluate the distinctive cost characteristics of shipments. (Page 68)

XVI TARIFFS Tariff complexity can be reduced and the utility increased by unification of rate systems and publishing authorities, by simplifying commodity classification and by grouping carrier routes into a limited number of definite channels. (Page 71)

THE OPERATIONS

XVII STATISTICAL ANALYSES The statistical data of all transport agencies should be uniformly amplified to permit analysis of operations for budgeting, managerial control and supervision, operating and plant improvement, pricing, servicing, marketing and planning. (Page 73)

XVIII CARRIER INQUIRIES The underlying statistical analyses of the report are based upon data furnished by rail, water, pipe line and highway carriers. Generally these data embrace the actual traffic and operating statistics of the entire base year. (Page 76)

XIX NATURE OF OPERATIONS Capacity of present transport facilities appears to exceed the prospective demand. Additional facilities are justified only when their economic superiority makes present facilities obsolete, and when demanded by general as distinquished from individual or local welfare. (Page 77)

XX CIRCUITY OF MOVEMENT Additional cost of transport, resulting from the circuity of the average rail shipment, can be reduced by cooperative group routing. (Page 77)

XXI OVERALL COSTS To provide an equivalent amount of transport service, the pipe line carriers require the least in capital investment, and the rail carriers the most, if governmental expenditures for waterways and highways be excluded. The cost of operative transport is cheapest in the case of water cargo carriers, and most expensive in the case of rail and water carlot carriers. (Page 78)

XXII CARRIER FIXED PLANT Due to the burden of an exclusive transport way, rail and pipe line unit costs for maintenance of fixed plant are relatively the same, and if government expenditures for maintenance of waterways and highways be excluded, much higher than the comparable costs of carriers using such ways. (Page 79)

XXIII TRANSPORT POWER The data indicate that in thin traffic areas, consideration should be given to the utilization of small-power freight cars and light locomotives which manufacturers now offer. (Page 82)

XXIV TRANSPORT VEHICLES A railway car of shock-proof chassis, with multiple sets of containers, which are interchangeable between railway, waterway, and highway vehicles, versatile in design, adapted to present day sales units, and accessible for economical loading and unloading, would improve transportation service, reduce its cost and discourage uneconomic distribution of traffic. (Page 85)

XXV CONDUCTING TRANSPORTATION The cost of operating carrier facilities is relatively greater for carlot than for cargo carriers. Substantial economies in rail transportation costs appear possible in operation of freight station facilities and in assemblage operations. (Page 90)

XXVI TRANSPORT OVERHEAD Rail overhead expenditure for executive direction, sales promotion and insurance are relatively lower than comparable expenses of the other types of carriers, while rail tax expenses are relatively higher. (Page 93)

XXVII YARD AND TERMINAL OPERATIONS Economy in rail yard service has been sacrificed to attain economy in road movement by heavy train loading, with the result that yard costs are greater than road costs. The terminal cost of rail and water carlot carriers far exceeds that of other carriers and is about twice the cost of highway service. (Page 95)

XXVIII LINE OPERATIONS Due largely to intermediate yardings and to the distribution of freight from terminal centers by way trains, rail line costs are relatively higher than costs of comparable services of all other transport media, except highways. (Page 98)

XXIX INTEGRATED MOVEMENT It appears that rail transport can be improved and its cost reduced by motorizing many collection and delivery services, establishing cargo (train load) service, and, in the case of many distributive operations, by substituting small-powered, light trains of a few cars for conventional trains of cargo type but of carlot consist. (Page 101)

XXX INTERCARRIER OPERATIONS The present policy of wide open routing leads to preferential treatment of shippers, undue prolixity and complexity in tariffs, circuitous routing, unnecessary interchanges, excessive terminal delays and thereby burdens industry, as well as the carriers, with avoidable waste. (Page 104)

COORDINATION

XXXI OBJECTIVES Coordination seeks, by a speedy, complete, convenient carrier service at simple, cheap but profitable rates, to develop the nation's transport adequately to fulfill every need of industry, promote trade and commerce among its citizens, develop markets of production and distribution, and stabilize the industry to the end that labor and capital employed therein shall be well compensated and made secure. To attain these objectives, it proposes to promote beneficial competition and to eliminate evil competition, to fuse common facilities of whatever kind into a single transport system, and to integrate joint functions into common agencies. (Page 106)

XXXII COMPETITION Competition, insofar as it stimulates service, efficiency and economy, should be promoted, but the evils of unrestrained agency, price, market and plant competition need to be avoided. (Page 107)

XXXIII MANAGEMENT Integration of commerce, territory, and industry makes necessary a parallel integration in joint carrier agencies of the common functions of pricing, through scheduling, redundant service, routing, marketing and research. (Page 109)

XXXIV AGENCIES Each form of transport is superior to each other form in some important respects, and inferior in others. All should be integrated by joint rates, interchangeable equipment, and common facilities, under a program designed to use each form in the field of its greatest utility. (Page 111)

XXXV OPERATIONS Wherever necessary for serviceable, efficient, or economical operations, all carrier equipment, terminals, and facilities should be used jointly and interchangeably by carriers of all types, under appropriate and fair user arrangements. (Page 113)

XXXVI EFFECT The suggested plan of coordination will promote public welfare and at the same time protect and conserve the interests of owners and employees of the transportation industry. (Page 114)

FEDERAL COORDINATOR OF TRANSPORTATION

Section of Transportation Service

THE REPORT

THE TRAFFIC

I THE UNDERLYING SURVEYS

1. Description. This report deals with transportation of freight within the United States on railways, waterways, and highways, and in pipe lines. Railways are operated as common carriers to transport freight in less than carlots and in carlots. Water carriers are of two types - carlot common carriers which transport freight in less than carlots and in carlots, and cargo private or contract carriers which transport it in cargo lots. Pipe lines for the transportation of petroleum traffic in cargo lots are generally operated by common carriers, but chiefly for affiliated companies. Motor trucks are used by common carriers chiefly to transport less than truck lots and by contract carriers and private carriers usually to transport truck lots.

The data considered are from reports and statistical publications of governmental agencies, field investigations, and returns to the questionnaires received in the course of eight underlying surveys, viz: The Shipper, Rail Carload Traffic, Railway Light Motive Power, Transportation Vehicles, Freight Stations, Waterway Traffic, Petroleum Traffic, and Highway Operations.

2. Objective. The objective of the surveys was to compile data necessary to define in broad outline the characteristics of an efficient system of transportation, serviceable to commerce and profitable to its owners, in which all types of transport facilities would be coordinated, each within the sphere of its service utility. The data have been arranged to depict: (1) The volume, source and flow of freight traffic; (2) the transportation service presently accorded, that demanded by the requirements of commerce, and that possible by modernization and coordination; (3) the level, structure, and commercial aptness of carrier charges and tariffs, with steps necessary for simplification, improvement, and adaptation to commercial realities; (4) the location, function, and service costs of transportation, present and potential; (5) the aptness of carrier equipment, facilities and methods; and (6) the coordinative steps which are indicated to attain the primary objective.

3. Typicality. The year 1932, the latest full year for which information was available, was selected as the base year for the surveys of Rail Carload, Waterway and Petroleum Traffic, and the year 1933 for the Shipper survey. Gauged by the results of the average of a 12-year period, consisting of the 10 preceding and the 2 succeeding years, the rail traffic revenues and costs in 1932 were about 39 percent below the average; but the rate level was substantially the same. The ton-mile unit cost of 1932, including all expenses and taxes, was the same as the average. The unit costs of maintenance and transportation were less and of overhead were greater than the average.

II PROFITABILITY OF FREIGHT SERVICE

4. Income. In 1932 the railways, after payment of operating expenses, including car hire and taxes, had left less than 570 million dollars from freight traffic, which was sufficient to pay a return of only approximately 3 1/9 percent upon the freight proportion (18 billion dollars) of the total railway investment. For the 12-year period, however, the revenues were sufficient to pay an average yearly return of approximately 5 percent upon the freight investment (1932).

In 1932 the reporting water carrier groups of each class, common, contract and private, suffered in the aggregate operating deficits of about 10 percent. Of the common carriers by water, all suffered operating deficits except the Atlantic Coastwise group and the Inland Waterways group, each with an operating ratio of 94 percent. Operations of contract carriers were generally profitable except those on the Great Lakes.

The operations of the pipe line carriers were uniformly profitable. For the pipe lines as a whole, a profit of 110 million dollars was realized, which was over 14 percent upon their investment of approximately 763 million dollars and was 52 percent of their total revenues.

Upon the whole, therefore, with the exception of the pipe line companies,* carrier freight transportation, in the United States in 1932, was not sufficiently profitable to afford an adequate investment return, and there seems little prospect that it can be made so, without marked changes in methods and policies.

5. Causes. The causes of unprofitability in freight transportation are: (1) Insufficient traffic, due to excessive rates, inferior service, or oversupply of transport

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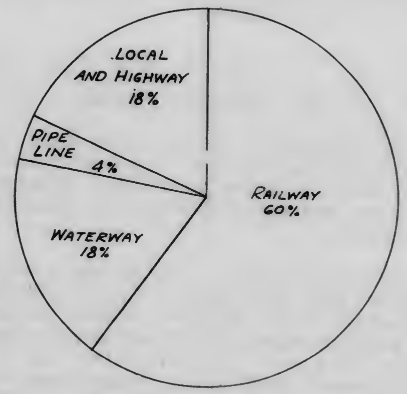
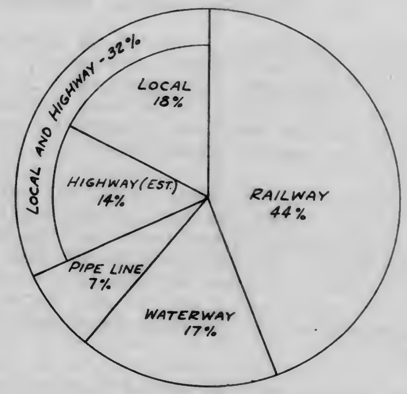
* Data for highway operations not available.

DISTRIBUTION OF TRAFFIC AMONG CARRIERS



1928 - 2330 MILLION TONS



1932 - 1570 MILLION TONS

facilities; (2) inadequate remuneration, due to cutthroat competition, ignoring of cost considerations in pricing, and competition of one agency for a traffic which can be handled more economically by another; and (3) high costs, due to insufficient traffic, excessive service, and wasteful or obsolete methods or facilities.

III FREIGHT VOLUME

6. Aggregate Volume. Total products available for transportation, which aggregated 2,330 million tons in 1928, dropped to 1,570 million tons in 1932. There were consumed locally or moved by highway 400 million tons in 1928 and 500 million tons in 1932.

7. Carrier Distribution. Using as a basis of estimate the total production of 1932 - 1,570 million tons - the railways originated 691 million tons or 44 percent; the waterways 272 million tons or 17 percent; the pipe lines 7 percent; highway carriers 14 percent*; and the balance, 18 percent, was consumed locally. Expressed as parts of the carrier tonnage (1,293 million tons) the rails originated 54 percent, waterways 21 percent, pipe lines 8 percent and highway carriers 17 percent of the total.

IV FREIGHT TRAFFIC MARKETS

8. Territorial Markets. About 52 percent of the rail traffic terminates in the Eastern District, and 44 percent originates in that district. Of the total traffic, about 25 percent originates and about 17 percent terminates in the Southern District. In the Western District, about 31 percent originates and a like amount terminates.

The Eastern District consumes about 20 percent more than it produces of all commodities in the aggregate. Of the Necessaries, it produces 70 percent of the amount it consumes; of Auxiliaries, it produces about the same amount as it consumes; of Semiprocessed Material, it produces over 90 percent of what it consumes; and of Raw Material, about 80 percent; of Accessories, it produces about 11 percent more than it consumes.

The Southern District, excluding Pocahontas Carriers, on the whole produces nearly 20 percent more than it consumes, largely Raw Material traffic. Of Semiprocessed Material, Necessaries, Auxiliaries, and Accessories, it produces about as much as it consumes. Pocahontas Carriers originate twice as much as they terminate, the excess consisting almost entirely of coal.

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* A statistical estimate described in Factual Summary.

The Western District produces about as much of all commodities as it consumes. This balance exists in the case of Rough, Raw, and Semiprocessed Materials, and Auxiliaries. It produces 50 percent more Necessaries than it consumes, but consumes about two thirds more of Accessories than it produces.

9. Terminal District Markets. The 86 metropolitan terminal districts* of the country consumed about one half the total carload traffic in 1932 and produced approximately one fourth of it. The 1,400 odd major terminals (i.e., points at which switch engines are employed) consumed one fifth and produced one fourth of it. The remaining 33,000 smaller towns, villages, and rural communities embraced within minor terminal districts (i.e., served by train switching) produced about 55 percent of the traffic, but consumed only about 25 percent.

Ten percent of the total carload traffic was consumed in New York and Chicago areas, collectively, and 25 percent in the eleven largest metropolitan terminal districts.

10. Trade Area Markets. When grouped into the 701 trade areas, into which the country is now commonly divided for commercial or marketing purposes, each consisting of the territory - rural and urban - tributary to a common market, city or town, it is found that the majority of the population is urban and that over one half of the rail traffic is originated and two thirds thereof terminated at the market centers.

V FREIGHT COMMERCE

11. Factors of Commerce. From a rail carrier standpoint, freight commerce is of two kinds: Local, which is traffic handled by a single railway without interchange; and intercarrier, traffic handled jointly by two or more carriers. From a geographic standpoint, it falls into two classes: Intraterritorial, that wholly within a given rate territory or district; and interterritorial, that between two rate territories, districts or regions.

12. Local Commerce. Local commerce handled by a single railway produced less than one third of the total rail revenues in the case of all commodities; one half in the case of Rough Material, grain and live animals, and one fifth of the other traffics. About one third of the water tonnage consisted of port to port traffic.

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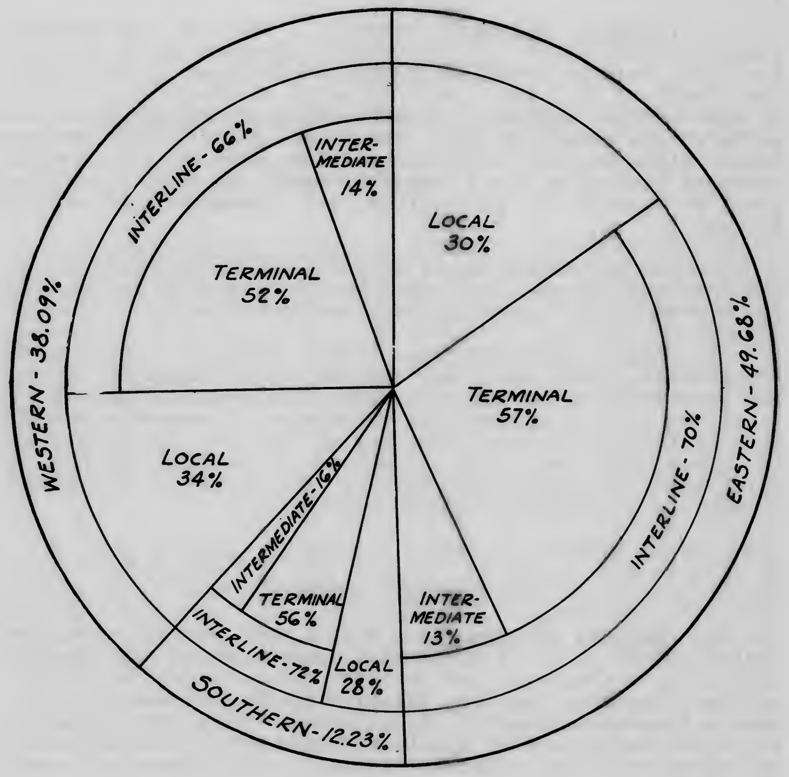
* Cities of more than 100 thousand population and their respective metropolitan areas, rural and urban.



DISTRIBUTION OF RAIL REVENUES-1932

13. Intercarrier Commerce. The intercarrier commerce produced 70 percent of the rail revenue, 55 percent accruing to the originating and terminating lines, and 14 percent to the intermediate lines.

14. Intraterritorial Commerce. There were approximately 30 million interchanges in 1932. Of this number, 23 million or 76 percent were intraterritorial. Of these intraterritorial interchanges, 3 percent were in New England, 27 percent in Trunk Line Territory, 31 percent in Central Territory, 3 percent between Lake Gulf Carriers,* 6 percent in Southeastern Territory, 14 percent in Western Trunk Line Territory, less than 1 percent in the Pacific Northwest, 12 percent in Southwestern Territory, and 3 percent in the Pacific Southwest. The bulk of water traffic reported was intraterritorial.

15. Interterritorial Commerce. About one fourth of all cars originated by railways move between classification districts and about one third between rate territories. The interdistrict cars produced about 40 percent of the rail revenue and the interterritorial cars over 55 percent of the rail revenue. Little interterritorial water traffic was reported due in part to omission of private petroleum tanker operations, the bulk of which moved interterritorially.

16. National Commerce. The growth and development of the country have resulted in a national commerce in which interterritorial traffic has become dominant making necessary reconsideration of the extent to which the present artificial territories for ratemaking and classification are justified in view of the distorted rate structures, sluggish movement of traffic, and transportation waste to which their existence contributes.

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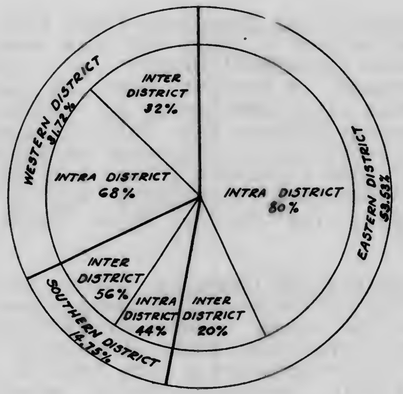
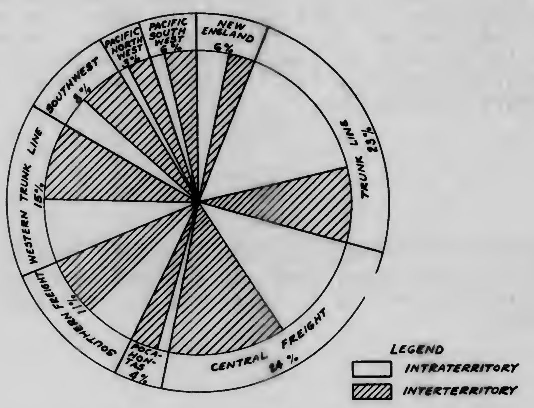
* Some of these carriers operate north and south in Western Trunk Line, Central, Southeastern and Southwestern Territories, making it necessary to segregate their interchanges.



Revenue Distribution of Railway Traffic Between Districts
December 13, 1933.



Revenue Distribution of Railway Traffic Between Territories
December 13, 1933.

THE SERVICE

VI ELEMENTS OF TRANSPORTATION SERVICE

17. Definition. The replies of the shippers to the questionnaires sent them show that the factors of service which attract their carload traffic in order of importance are speed, completeness, schedule correlation and adaptness. These are largely the same factors which the shippers of merchandise also stressed. That they are of importance is evidenced by the tendency of shippers to provide their own transportation - a tendency which can only be arrested by an improvement in common carrier service.

VII TRANSPORTATION SPEED

18. Basis. The demand of the shippers for faster service is due not only to the speeding up of all processes of civilization, but also to the fact that speedy service is dependable, certain service, the latter attribute being a by-product of the alertness, attention and effort necessary to effect the former.

19. Determinative Factors. The factors which determine the speed of a movement are: The time necessary to effect collection or delivery in the terminal; the frequency with which schedules are operated; and the speed at which the vehicle is operated upon the road. At present the motor vehicle, due to greater freedom of movement, generally affords much quicker means of collection and delivery than the rail switch engine. It also possesses decided advantages on the road in that being a single operating unit, it does not require assemblage and break-up service at intermediate yards, as do the train units. On the other hand, the railroad's private right of way affords it the opportunity to operate at road speeds much greater than are possible on a public highway - an opportunity rarely realized when full tonnage trains are operated.

20. Present Speeds. The highway motor vehicle at present provides the speediest overall land transportation - on the whole averaging over 15 miles per hour between consignor and consignee, compared with 5 miles per hour by railway, 3 to 10 miles per hour by waterways and 1 to 5 miles per hour by pipe lines. The relatively poor showing of the rail carriers was due in part to low speed limits imposed on

train crews, partly to agreements limiting time of competitive service, but chiefly to the fact that over two thirds of the carrier time is consumed in terminals and yards, reducing the average road speed of 16 miles per hour to an overall speed of 5 miles per hour. These terminal delays were due to the time consumed in assembling trains, to long waits because of infrequent service, to reclassification en route at intermediate yards and to interchanges between carriers.

21. Potential Speed. The potential ability of the railway to move freight on the road at speeds much in excess of those possible by other land agencies will prove of little practical value until terminal delays are eliminated or drastically reduced. This can be accomplished in part by the operation of short trains upon more frequent schedules (provided economical units therefor are developed); by motorizing terminals in many cases; by unifying terminals; by reducing multifarious routing; and by cooperative routing and scheduling of intercarrier trains.

22. Effect of Speedy Service. Returns to the shipper questionnaire indicate that in 1933, tonnage equal to nearly one sixth of the entire rail tonnage in that year moved by highway, in part because of speedier service.

VIII COMPLETENESS OF TRANSPORTATION SERVICE

23. Nature and Basis. Complete service carries the implication that the shipment will be received from the consignor at his door and delivered to the consignee at the latter's door. The issue has been so alive in the recent past with respect to merchandise or l.c.l. traffic that there is a possibility that its importance will be overlooked in the case of carload traffic. To render complete service, the carrier's transport facilities - water dock, rail track or branch pipe line - must extend to the patron's door, or the goods must be transferred between the premises of the patron and those of the carrier. Prior to the development of the motor truck as a freight transport agency, complete carrier service was largely confined to operations of the former type.

24. Present Service. Actual data as to the extent to which delivery (origin or destination) is afforded by water carriers were not obtained. The data indicate, however, that a considerable volume of the water traffic originates or terminates on rail lines. Pipe lines collect crude petroleum by means of gathering lines which tap producing wells and almost universally deliver the product directly to the refineries or to rail tank cars or to tankers for

ultimate delivery. The motor truck also renders a practically universal collection and delivery service. The rail carriers in 1932 originated about 88 percent of their carloads on industry tracks and terminated about 77 percent upon such tracks. The remainder of the cars were originated on public tracks (house or team) which necessitated that the patron, at his own expense, transfer and dray the freight between the track and his place of business.

Rail carload collection and delivery is rendered with respect to over 80 percent of all traffic. In the case of some commodities, however, it is afforded on less than half, and on others on less than 60 percent of the total. On the whole, the service is much more generally accorded the processing agency than is accorded the original producers or the small retailer; the resulting discrimination costs these shippers on the average an amount equal to nearly one fifth the freight charges.

25. Potential Service. Removal of the handicap, under which rail and water carriers labor because of an incomplete service, is now possible. In another connection the possibilities of the substitution of containers for the present box cars is discussed at some length. Through the use of such containers, the rail or water carriers can effect complete service in many cases at no more, and frequently for less cost, than is now entailed in effecting industry track deliveries. In cases where the containers are not used, the railway, through concentration of loads, can provide the drayage and transfer at an average cost per ton considerably below the cost now borne by the patrons.

26. Effect of Complete Service. Returns to the shipper questionnaire indicate that a substantial carlot tonnage of relatively high grade is now moving by highway on account of the complete service offered by that agency.

IX SCHEDULE CORRELATION

27. Demand. An element of transport service which directly affects its utility to the patron is the degree to which its movement schedules are correlated to the patron's production or business needs. This correlation is of importance in three respects: The frequency of the schedules; the time or times of day at which they are operated; and their dependability. Its effect upon the value of the transport service lies primarily in speed and economy, as well as convenience in coordinating the two operations. To attain the former, the patron may, and frequently must, sacrifice either his own convenience or economy of operation. Attainment of the latter may result in delay in the time of movement.

28. Present Schedules. Present rail and water schedules are relatively infrequent, due to the fact that many sales units are assembled into a single transportation unit for movement, whereas in the case of highway truck lot operation the sales and transportation unit can be synchronized.

29. Potential Service. Potentially, of course, the railroad has the same degree of flexibility as the motor truck. A single car can be run from the door of the consignor to that of the consignee - in fact it has been done. Basically, a truck load can be operated as economically on the rails as on the highway, perhaps more so. Because it may not be economical to operate single cars, however, it does not mean that hundred-car trains are necessarily the most economical. The question of the relative costs of operating short and long trains will be discussed in some detail in a later connection. It will suffice to point out at this time, that the overall cost per car mile of operating the average high-speed express train, consisting only of head end equipment, is no greater than the cost per car mile of operating the average freight train. This fact points to a possible solution - the operation either of more and shorter trains, or of short follow-up trains to supplement and perhaps overtake the longer and regularly scheduled trains.

30. Effect of Correlation. The shippers of over 10 percent of the tonnage reported that they used the highway because of the ability to get more dependable service, and the shippers of over 12 percent because of more convenient or flexible schedules. In the first case, the ratio of the highway tonnage to the total was 80 percent greater than the average, and in the other, 100 percent greater. These shippers were found principally among those industries where transportation must function as a part of the business - mines, paper mills, packing plants, textile mills, refineries and handlers of iron and steel articles. It should be pointed out also that the highway tonnage of these shippers aggregated in the first case 19 percent and in the other 25 percent of the total highway tonnage reported by all shippers, indicating that in the neighborhood of 50 million tons are moving by highway partly on this account.

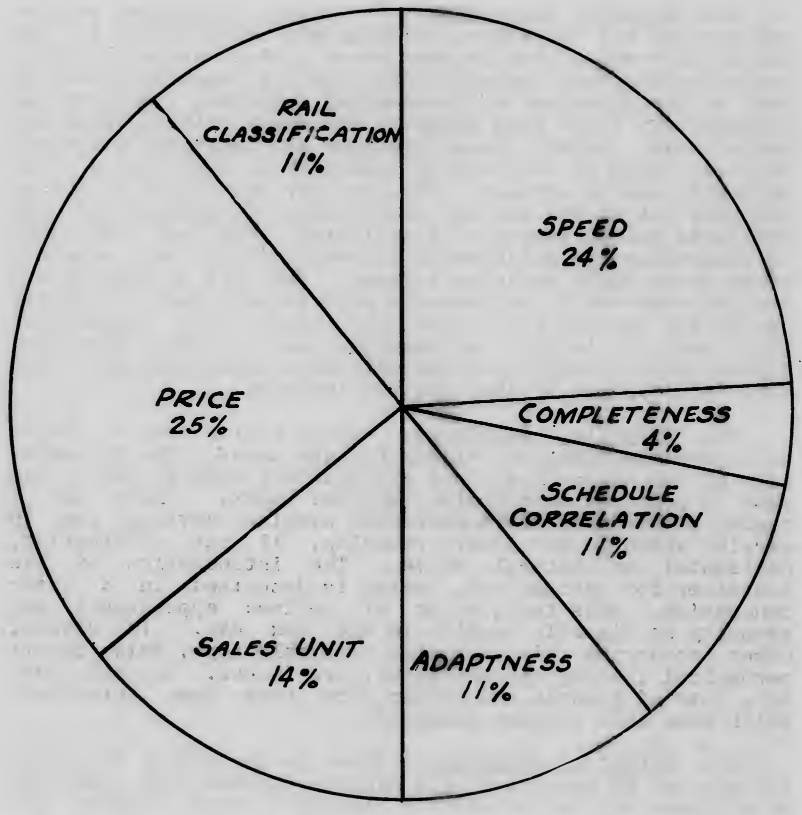
X ADAPTNESS

31. Nature and Demand. The word "adaptness" is used to describe the ability of carrier equipment to transport freight safely and securely, with a minimum expenditure of time and money upon the part of the shipper in preparing it for and protecting it during shipment. Concretely, it means equipment which reduces: The need for packing and crating by being shock-proof; the need for protection against temperature by having efficient heating and cooling devices; and the need for undue expense in loading and unloading by being designed to facilitate the mechanization of those operations in every possible way.

32. Present Adaptness. To protect the goods, packing and crating are necessary, not only when in transit in the carload movement, but in many cases for subsequent reshipments in less than carload lots. It is made necessary in part by the character of the carrier vehicles. Shippers by highway have found that owing to the small unit in which the goods move, better shock-proofing and temperature-control devices, much of the packing necessary in the case of rail shipments can be avoided. The box car relatively is a huge vehicle, but on the average only about 50 percent of the available volume capacity is utilized. Its very size tends to discourage the refinements in construction and appointments which small vehicles possess. The cost of packing and crating reported by shippers is surprisingly high, averaging nearly $50 per car even when the heavy bulk commodities which require little or no packing, such as sand, stone and gravel, grain, coal, ores and petroleum, are included; and about $70 per car if they are not included.

33. Potential Adaptness. Rough riding need no longer be a characteristic of railway freight cars. The introduction of non-harmonic springs and snubbers several years ago made it possible to minimize vertical shock. There are a number of improved draft gears and similar devices now in service which go far toward reducing, if not eliminating, horizontal or lateral shock. The introduction of the container for carload use, which is described in a later connection, adds the quality of refined appointment and security so signally lacking in the box car. In several other countries box cars with removable tops, which permit mechanical loading and unloading, are in use. In this country, covered gondola and hopper cars have been introduced which make this economy possible.

34. Effect of Adaptness. About 13 percent of the total tonnage and 28 percent of the highway tonnage was reported by shippers who patronized the highway in part because the equipment permits more economical packing and crating. The need seems to be most keenly felt by the packers, bakers, grocers, iron and steel handlers, and automotive dealers.



FACTORS WHICH INFLUENCE SHIPPER PATRONAGE

THE CHARGES

XI ELEMENTS OF FREIGHT CHARGES

35. Determinative Factors. Requisites of a transport price system are charges which are reasonable and non-discriminatory, encouraging the largest possible volume of profitable traffic and producing revenues adequately compensatory for the service and capital employed. The factors which go to make up such a system are: (1) Sales units which at once meet the needs of commerce and promote economical transport; (2) classification into cognate rating groups of the traffics which move; (3) a rate level which will promote the profitable movement of goods; (4) a rate structure devoid of preference and designed to encourage the movement of particular traffic by the agency or agencies which can handle it most serviceably and efficiently; and (5) tariffs which simply and concisely publicize as well as fix the prices.

36. Reorganization. The present system of freight charges was evolved during a period when the railroad furnished the chief, and for many purposes the only, form of land transportation. Keen competition between railroads prevented this situation from becoming a monopoly in the true sense of that word. The rates which developed before the era of public regulation were based upon what the railroads could get or "what the traffic would bear". Little attention was given to the cost of providing any particular service since only the aggregate costs were known or considered.

Public regulation improved the situation greatly and made the rate structure a more orderly, stable and dependable affair. The basic characteristic, however, of the value of the service system persisted, the reasonableness of rates being tested by comparison with other rates and competition being recognized as a justification for differences in rates, which otherwise could not be justified.

A development whereby shippers were enabled to provide their own transportation by means of pipe lines, tank vessels, and still more recently by motor truck, has brought cost into the foreground of transport pricing. That no one who is sane and free will pay more indefinitely for carrier transport than the cost of providing his own transportation is self-evident. Whether regulated or not, the prices charged by highway or waterway operators, as well as by railways, inevitably will be limited to what it costs the shipper to provide his own service as a ceiling, and what it costs the carrier to furnish it as a basement. This condition will and should have a profound effect upon carrier pricing.

The principle of non-discrimination demands that the cost of the service be given greater recognition along with the value of the service as a basis of ratemaking. This in time will require a basic reorganization of the charge system.

Many of the changes which are indicated can be made quickly without disturbance of commerce or business. Others which affect vital and long standing business relationships must come more gradually but in full recognition of the fact that these disturbances of commercial relations, in large measure, already have been brought about by the advent of the new transport agencies, and wholly independently of any formal change in the rate system.

XII FREIGHT TRAFFIC SALES UNIT

37. Requirements. Economic and industrial development within recent years has resulted generally in the unit in which manufactured materials are traded becoming much smaller in size, with the result that the shipper is constantly seeking smaller transportation sales units for semiprocessed and processed products. On the other hand, the development of large scale operations and the concentration of industry have resulted in the opposite tendency with respect to basic raw materials, requiring that such materials be transported in large cargo capacity lots in order to attain regularity and economy in movement.

38. Present Sales Unit. The present carrier sales unit is the hundredweight coupled with the minimum weight, which will be charged in cases where a single vehicle is required for the shipment. The tendency has been to gradually increase the size and capacity of rail equipment, without attaining a corresponding increase in the average load of cars.

A large number of shippers are using the highway because it enables them to ship in loads of from one fifth to one third the corresponding load which must be shipped by rail. Present rail and water carlot carriers generally fail to provide equipment for shipments intermediate between the less than carload shipment and the full carload shipment, while rail and highway carriers in general do not provide vehicles or means for the cargo transportation of bulk commodities.

39. Modern Sales Unit. The data indicate that the carlot sales unit which will best meet the requirements of shippers of manufactures is one averaging about 500 cubic feet and 10 tons. This demand can be met by containers which will permit the movement of commodities at no substantial increase in cost to the transportation agencies for the movement. These containers should be interchangeable between rail, water and highway carriers. In lieu of the system of minimum weights, rates should vary in accordance with the size of the shipment. On the other hand larger equipment for the handling of basic materials in much greater quantity and in cargo lots should be provided by the railways which, to be attractive, must be supplemented by a system of cargo or train load rates.

The program for the change from box car to container should be designed to meet this demand gradually, and should be directed first to those commodity groups in which it is felt most keenly, such as for instance, fresh milk, furniture, household goods, chinaware, drugs, building materials, and fuel.

40. Effect of Modern Unit. It appears that freight aggregating in the neighborhood of 75 million tons per year and consisting principally of processed or manufactured materials is now being moved by highway in part, because of the lower minimum weights which are available when that agency is used.

It is impossible to do more than to approximate the extent to which the cargo shipments of petroleum, grain, coal, lumber, ores, perishables, etc., would move by rail. Out of a total available tonnage of 241 million tons of petroleum and its products handled in 1932 by all carriers, an amount equal to over one third the total rail tonnage, in excess of 150 million tons, was handled in cargo lots, for which the railways had no tariffs.

XIII FREIGHT COMMODITY CLASSIFICATION

41. Purpose. Necessity for classification or grouping of commodities for ratemaking purposes arises out of the fact that it is not feasible for many reasons to construct a separate rate system for each of the 5,000 commodities which move in commerce. The carrier pricing function has a twofold purpose: To adjust the prices between different kinds of traffic in order to encourage the maximum movement of profitable traffic; and to adjust prices between commodities themselves in accordance with their respective characteristics which affect the cost to the carrier in handling them.

Volume is an important factor contributing to the determination of unit costs. To the extent that the volume of low grade commodities is increased by lower rates, reductions in the relatively higher rates on other commodities, are made possible by the decrease in unit costs resulting from the increase in aggregate volume. This practice, generally termed the "value of the service" principle, must, however, be kept in narrower limits than formerly, owing to the ability of the shipper to provide his own transportation.

Characteristics of different traffics which affect costs are the density of the commodity, the risk of loss and damage in its handling, and the special services required for its transportation. It is possible to define clearly the principles to be followed in classifying commodities in accordance with value or those which should be controlling in relating rates to cost. Clear and definite rules, however, are impossible when the attempt is made to classify articles in accordance with both the value and the cost principles at one and the same time.

42. Load. Vehicle loading affects a carrier's cost because its movement expense varies with gross and not with net load; that is, the cost of handling a net ton of freight in a given vehicle, such as a car, varies in direct relation not with the number of net tons hauled, but with the number of gross tons hauled, i.e., the tons of the car and contents. Vehicle loading in turn depends upon two wholly dissimilar variables, one voluntary, the quantity which the shipper elects to load; and the other involuntary, the quantity which the density (weight per cubic foot) of the particular commodity permits to be contained in the vehicle space. The latter variable is one which can be separately evaluated, if it were necessary, for each of the 5,000 commodities. The former cannot be evaluated as a classification element, save by the makeshift of "minimum weights". Determination of this element in the classification becomes unnecessary if in connection with the rate structure, the rates for any commodity or group of commodities are calculated in terms of gross weight although expressed in terms of net weight. By the simple expedient of making the rate per net ton vary with the gross tons, loading, both voluntary and involuntary is automatically evaluated with respect to each shipment, making it possible to eliminate all questions of density and minimum weights from the classification process.

43. Risk. The element of risk of loss or damage to the freight looms large in many classification controversies but apparently is actually of small importance. It is a factor capable of fairly exact appraisal, although as yet the statistics necessary to that end are not reported. Aggregate payments for loss and damage on account of rail carload shipments amounted to a little over 1/2 of 1 percent of the total freight revenues. The highest ratio was in the case of perishable traffic, somewhat more than 3 percent of the revenues. There is little need to confuse this factor as an element of classification. It ought to be treated for what it is - insurance against risks ordinarily incident to transportation. This can be accomplished in one, or perhaps a combination, of two methods. It can be ignored and treated as a common overhead of all transportation, or it can be separated from the transportation rates and priced separately as an insurance premium is priced. The present system of express rates, which treats the element as a common overhead up to a certain value and as an accessory premium beyond that value, is an illustration of the combination method.

44. Special Service. The problem here is somewhat, but not greatly, more complicated than in the case of risk. These special services rarely are universally necessary with respect to all shipments of a given commodity. Unless they are universal, there is no more reason for saddling part of the cost upon those shippers of the commodity who do not require them, than upon shippers of all other commodities. The better practice, where they are unimportant, would be to consider them as a part of the transport overhead. They should, where they are important, be priced separately. In any event they have no proper place in a classification.

45. Present Classification. Each of the three districts into which the country is divided provides separate ratings of the commodities listed in the Consolidated Classification, resulting in three classifications - Official (Eastern), Southern and Western. In addition there are State classifications, unnumerable classification exceptions and commodity rates, all of which mark departures - some quite radical - from the basic classifications.

These classifications are the outgrowth of practical experience, which is another way of saying that they are largely empirical. The items are individually treated and except in cases which are decided by the Commission, the differences in treatment are not based on reported principles, relationships, analogies or reasons, but rest upon the sound judgment of the classification committees. A detailed analysis indicates that despite the complexity of the system, present commodity charges fall into a limited number of groups, the ratings of which are encompassed within a relatively narrower spread than is apparent from an examination of the classification and rates themselves.

46. Suggested Classification. It is suggested in the classification processes that all cost elements be eliminated and the value of the service element alone be considered;

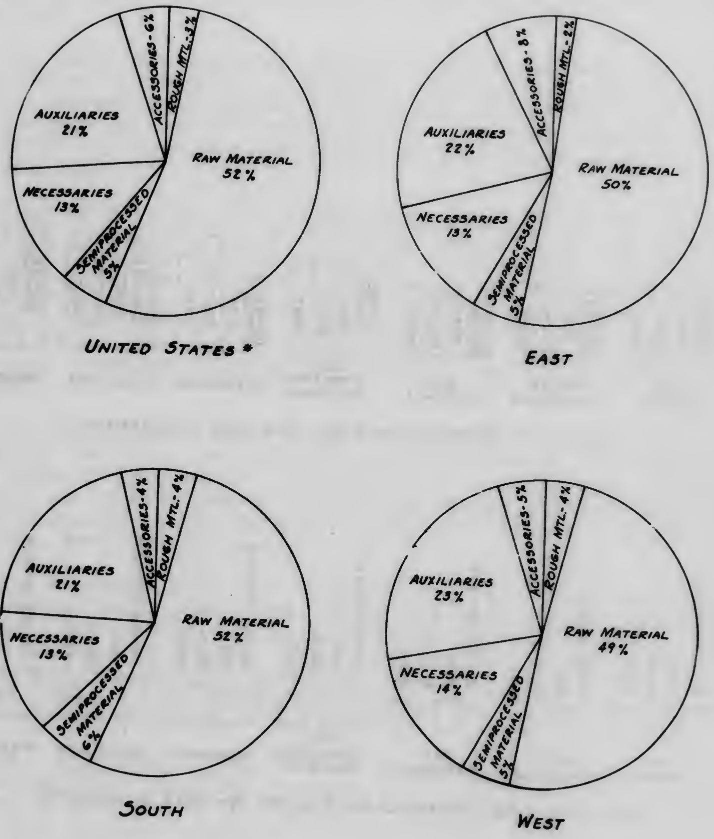
that all commodities first be classified into primary groups upon the basis of utility in order to prevent discrimination between commodities having a similar use, and to effect reasonable opportunity to mix homogeneous things, and then that these primary groups be collected into a limited number of general rating groups, substantially in accordance with the stage of processing reached in the transition from rough materials to luxuries or accessories. Each of the general rating groups and such of the primary groups as require it, should be separately rated so that the maximum volume of profitable traffic will be attracted, no traffic repelled by excessive rates, none handled at an actual loss; and that the aggregate traffic, when weighted by volume, will produce revenues sufficient to make the carrier operations profitable.

There appears to be no need to continue three separate classification rating systems, from either traffic or commercial standpoints. With important exceptions there is little difference in the revenue results of the three classifications, and there is little, if any, difference in the distribution of the different commodities between the three classification territories.

The process of changing the classifications should be an orderly one. The first and most important step is the determination of the general rating groups and the assignment of commodities to them. As shown by analysis of 1932 revenues, there are a large number of commodities which could be readily aggregated into homogeneous groups without disturbing present relative levels. The others should be treated initially as exceptions and changed as the occasion or demand therefor arises.

XIV PRICE LEVEL

47. Definition. A rate level of a carrier or group of carriers means the average charge for the average transport service unit. It provides a measure by which the reasonableness and adequacy of the rate system, from the standpoint of the public and carrier, may be tested. On the other hand the rate level of a given commodity means the average charge for the average unit of that commodity and is a common denominator by which relative reasonableness of the general level on different commodities may be tested, but not necessarily adequacy of such charges to produce profit. The carriers have known whether their rates as a whole were profitable, but very little about the profitability of particular rates. To avoid confusion and distinguish between these two kinds of rate levels, one will be called a "carrier rate level" and the other a "commodity rate level."



United States *

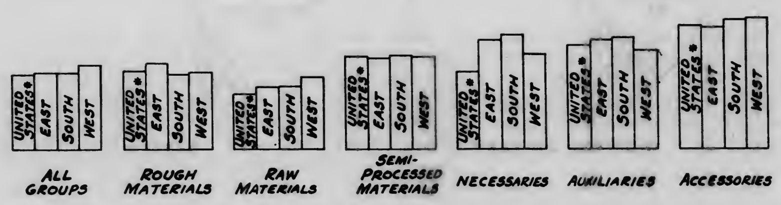
East

South

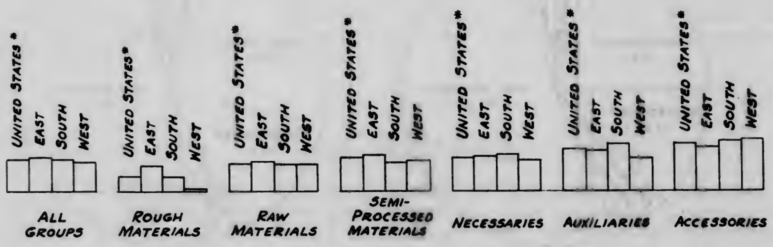
West

Revenue Distribution of District Revenues Among General Commodity Groups - 1932

* Pocahontas Carriers Included in United States but Omitted from East and South.



Relative Revenues per Net Ton Mile in Districts



Relative Line Revenues per Equated Ton Mile in Districts

* Pocahontas Carriers Included in United States but Omitted from East and South.

48. Carrier Level. Factors which enter into a carrier rate level are its traffic volume, average load, average haul, distribution of its traffic, competition between the carrier and other carriers or agencies, and between the producers or distributors served by it and those served by other carriers.

The rail carrier rate level as a whole has been constant over the past few years. Between 1928 and 1932 the revenue of all Class I rail carriers did not vary materially from the average of 10 1/2 mills per net ton mile, but in 1933 and 1934 it appeared to recede to just under 10 mills per net ton mile.

From reports of the Commission it appears that during the same period the net ton-mile revenue of the Eastern District declined from 11 mills to 10 1/2 mills, the Southern District from 9 to 8 2/3 mills, and the Western District from 11 2/3 mills to 11 1/2 mills. The relationship of the ton-mile earnings of the three districts to those of the United States (as 100) in 1932 were: Eastern District 99 percent, Southern District 81 percent, Western District 106 percent.

If Pocahontas, which represents a distinct and peculiar group of carriers, is removed, the 1932 revenue per ton mile is: East 10 7/10 mills, South 10 6/10 mills, West 11 2/10 mills; or in relation to the United States average (including Pocahontas in the latter), East 102 percent, South 101 percent, West 107 percent.

The average haul per carrier in the East and South (excluding Pocahontas) was about the same - just under 200 miles. In Pocahontas it was nearly 300 miles and in the West about 240 miles. The average loads in the East and South were practically identical and that in the West about 4 tons less. In Pocahontas Territory, it was 50 percent greater than in the East and South.

49. Commodity Level. The shippers appear to be quite convinced that carload charges by rail are substantially higher in many cases than the cost by highway. In connection with the shipper inquiry, a large number of comparisons of typical movements by rail and highway were reported. These comparisons show that on the whole rail transport charges were over 20 percent higher and total charges 25 percent higher than comparable charges by highway, and that in some cases the rail carload rates exceeded the highway costs by nearly 100 percent. They were uniformly higher for all average hauls varying from 20 to 815 miles.

The shipper comparisons depict rail rates substantially higher than those indicated by the average of the rail carrier revenue. This in part is due to the fact that the latter rates are weighted by much longer hauls and include a preponderant amount of intercarrier hauls, where the carrier revenue is relatively low, whereas in the shipper comparisons, local or single line hauls predominate, which produce carrier revenue relatively higher than that produced by intercarrier movements.

The railway statistics show an average rail revenue of 10 1/2 mills per ton mile, depressed by the large volume of bituminous coal, which produces a much lower ton-mile revenue than other commodities. If that commodity be excluded, the rail average ton-mile revenue rises to 12 mills. The average revenue per ton mile is lowest in the case of the Raw Material group and rises progressively with the degree of processing accorded, reaching the maximum average of 17 mills per ton mile in the case of Accessories. If the Pocahontas Carriers be excluded, there is relatively little difference in the revenue per ton mile between the three districts, either as a whole or when gauged by the six basic commodity groups. The average revenue per ton mile of water carlot carriers was about 6 mills, varying from 4 mills in the case of the Intercoastal Carriers to 14 mills in the case of the Atlantic Coastwise Carriers. The average pipe line revenue per ton mile was about 7 mills for crude petroleum and 11 mills for gasoline.

The ability of the shipper to provide his own transportation by highway limits the operation of the value of the service principle to the cost of such owner transportation, as the maximum charge which may be imposed. To ascertain the extent to which these limits are presently exceeded it is necessary to compare the level of rail commodity rates, as evidenced by the revenue which they produce, with the cost of highway transportation. Scales were constructed in order to make this comparison. The first was a mileage scale of trucking costs based upon data gathered in the highway survey. The others were a series of synthetic mileage scales, depicting the level of average rail charges as evidenced by the revenue received from important commodities. In addition, estimates were made of the percentage relation of the rates upon the particular commodity to the first class rate in the territory deemed most typical, in the case of such commodity.

Graphic comparisons of the truck costs, the synthetic charge scale and the estimated percentage relationship to the first class rate in the case of each of the twenty-seven principal commodities are shown beginning on page 41. Two truck costs are shown, one that of a fully loaded movement in each direction and the other one in which 65 percent of the return movement is deemed to be empty. These two costs are intended to approximate the ceiling of rail rates, i.e., the price beyond which the traffic will be driven to the highway.

The average of the present charges penetrates this ceiling in the case of each of the commodities shown which, in the aggregate, produced over 82 percent of the total rail revenue in 1932. The point of intersection fixes the distance below which the cost by highway is less than the average charge.

In the case of bituminous coal the point of intersection is reached at 27 miles, with anthracite coal at 40 miles, gasoline 105 miles, miscellaneous manufactures 225 miles, wheat 45 miles, citrus fruits 250 miles, fresh vegetables 205 miles, lumber 70 miles, structural material 100 miles, fresh meat 280 miles, wheat flour 75 miles, automobiles 305 miles, kine 180 miles, potatoes 200 miles, cement 80 miles, corn 65 miles, road and fuel oil 75 miles, manufactured foods 90 miles, canned goods 130 miles, ores 30 miles, swine 185 miles, sugar 80 miles, sand and gravel 20 miles, fibres 200 miles, printing paper 80 miles, furnishings 225 miles, and textiles 260 miles.

For practically all distances under 50 miles, the straight line of the synthetic scale is substantially below the curve of the percentage relationship of first class, estimated to represent the actual rates rather than the average revenues. The latter are undoubtedly lower than the actual short distance rates due to the tendency of rail rates to taper the rate of progression in the longer distances. If the curve of these percentage relationships be substituted, it is seen that the truck zone made possible by the rail rate system is much enlarged.

50. Effect. The situation depicted in the preceding section has had precisely the effect to be expected. The shippers of nearly two thirds of the tonnage by highway reported that they selected that agency in part because of the lower charges. These same ratios prevailed in practically every business group.

One outstanding fact, however, is that the shippers who assigned low cost as the cause of highway use are predominantly those dealing in processed materials. Less than 20 percent of the tonnage represented was of business groups dealing in Raw Materials. Seventy-one percent of the tonnage moving by highway was of industries dealing largely in fully processed materials. Examination of the comparisons of typical rates submitted by these shippers, as well as of the charts, indicates that generally, but with important exceptions, the trouble lies in the short distance rates on processed manufactures and that as a whole the level of the rail rates is considerably below the alternative highway cost. In other words, the maladjustment is in the structure and not in the commodity rate levels themselves.

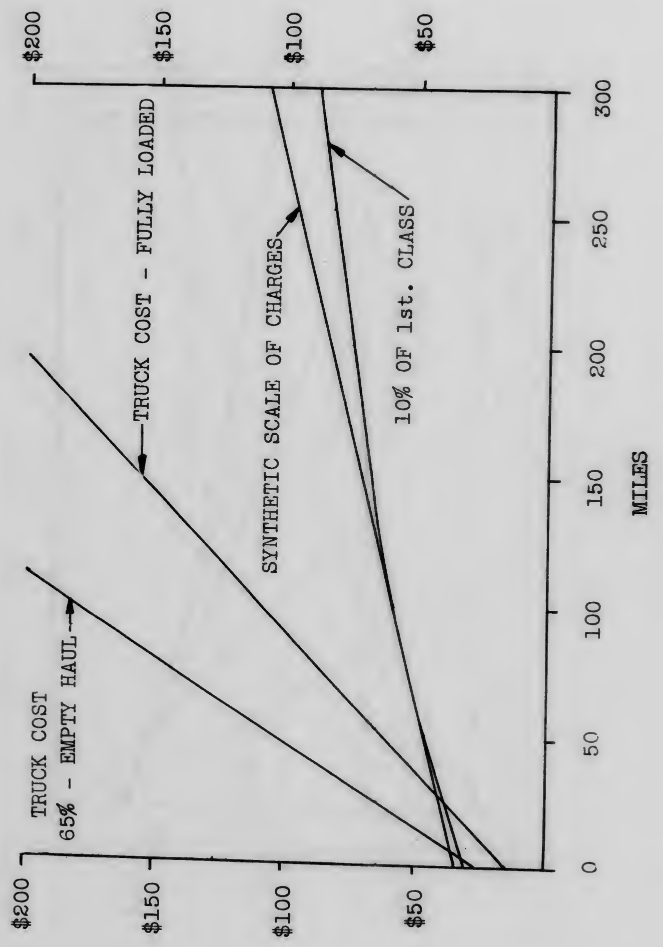
51. Modern Level. If, as we have suggested, the value of the service basis be exclusively used in classification, there is no occasion again to consider it in connection with the rate levels. These levels should be based purely on costs for several important reasons: To insure profitable operation; to avoid competitive or cutthroat ratemaking; to eliminate all possibility of market preference or discrimination; and to avoid litigation from ratemaking.

Insofar as the determination of the basic carrier level of the country as a whole or of an individual rate territory is concerned, costing can be made a relatively simple process.

The prime essential is a gross weight unit in which the transportation costs first can be calculated and then converted into net weight units. In connection with the discussion of the rate structure the suggestion is made that the "equated tons" of a shipment, i.e., the gross weight of the car and contents while under load, is such a unit. To express carrier operative costs in terms of equated tons and expand these costs to cover overhead and profit by means of operative cost ratios are simple arithmetical processes which will produce the carrier rate level. Application of the classification ratings or percentage relationships to this base unit will reveal the respective commodity rate levels.

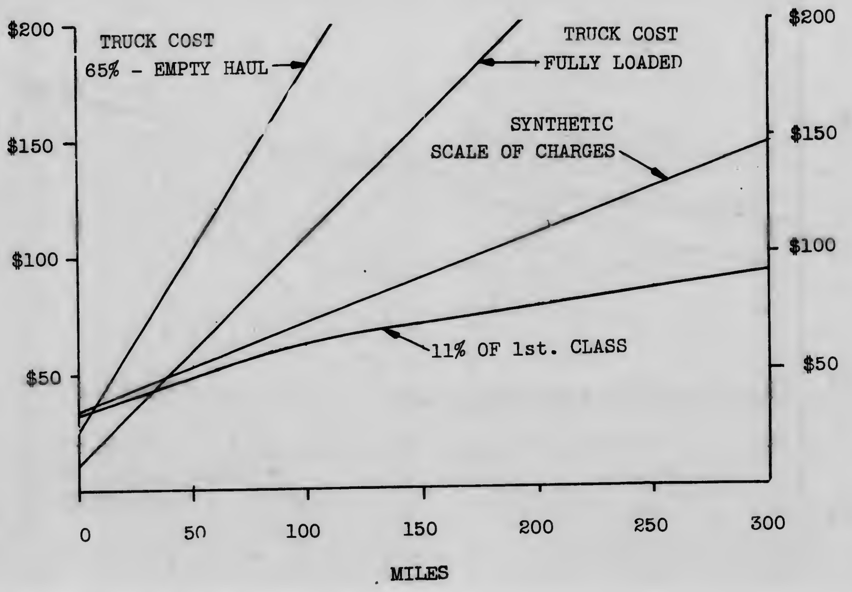
As heretofore stated, the situation with respect to the actual rate level for the short distance is in all probability more serious than that depicted by the synthetic rate scales. This situation may be due to one or both of two factors - relative high terminal or initial rating, or too high a line rate. It is not met adequately by blindly cutting rates in particular situations and seeking to recoup revenues by general rate increases. It must be met by readjustment of the rate system to meet general conditions. The scales indicate that in most cases the present initial charges are in excess of those necessary to cover terminal cost plus profit. Since the cost of highway terminal haulage, on the average, is below that of rail terminal haulage, the cost of the latter (expanded for profit) should constitute the maximum initial charge in all cases.

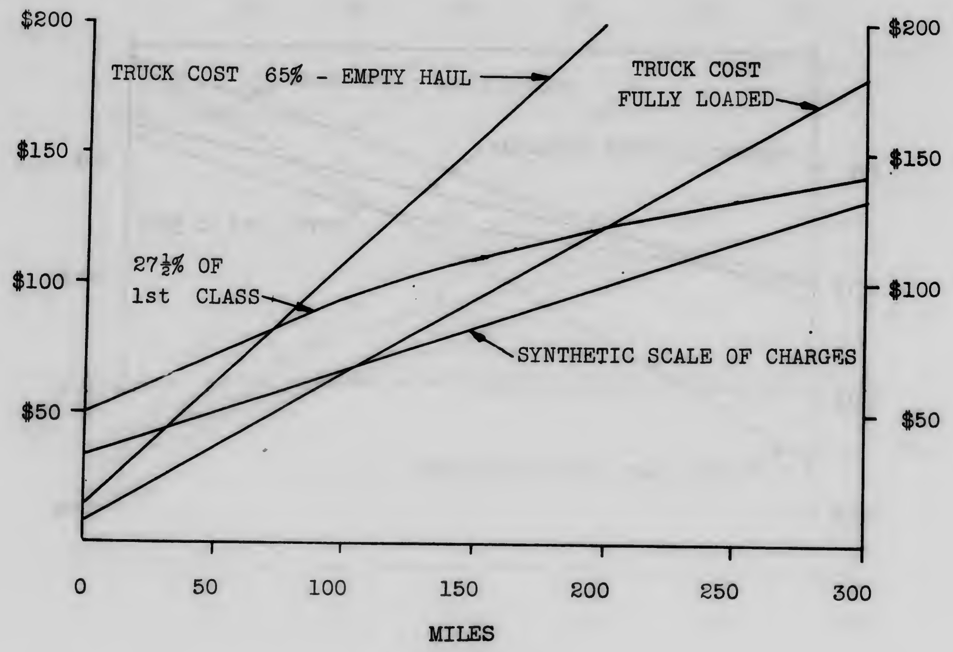
In many cases this change alone would afford the opportunity to use the most efficient form of transportation. In others, however, the level of the scale as a whole must be reduced to accomplish this end. Adjustments should not be limited to reductions, as there must be corresponding increases in the rating of other commodities in order to produce the necessary revenue, without which the service cannot be rendered. This readjustment cannot be accomplished overnight without disturbances to industry and commercial relations, which as far as practicable are to be avoided.



BITUMINOUS COAL
CHARGES FOR HAULING AVERAGE LOAD OF 53 NET TONS

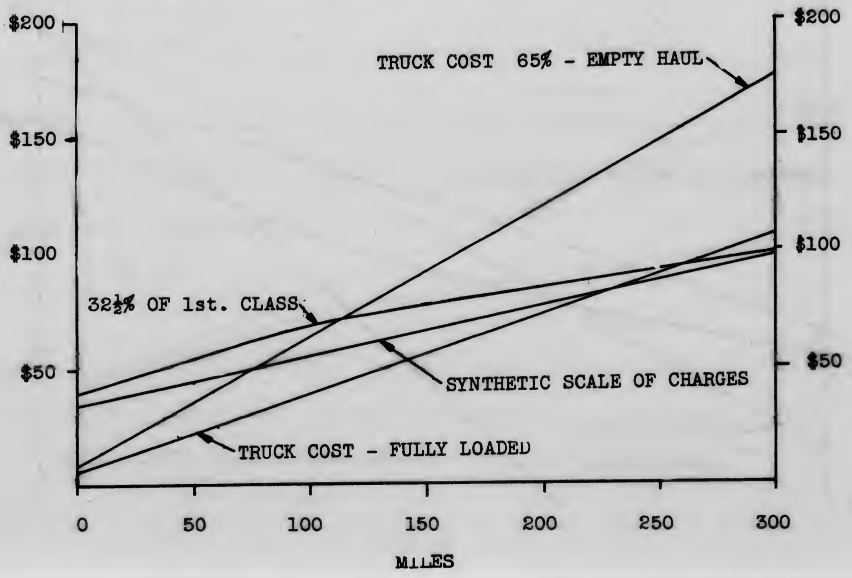
ANTHRACITE COAL
CHARGES FOR HAULING AVERAGE LOAD OF 51 NET TONS

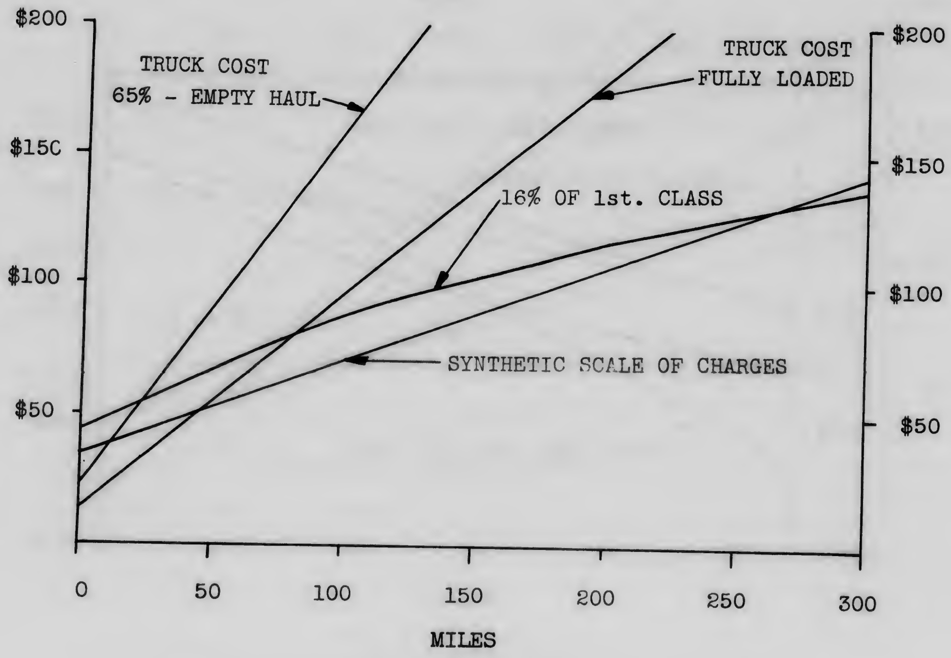




GASOLINE, ETC.
CHARGES FOR HAULING AVERAGE LOAD OF 28 NET TONS

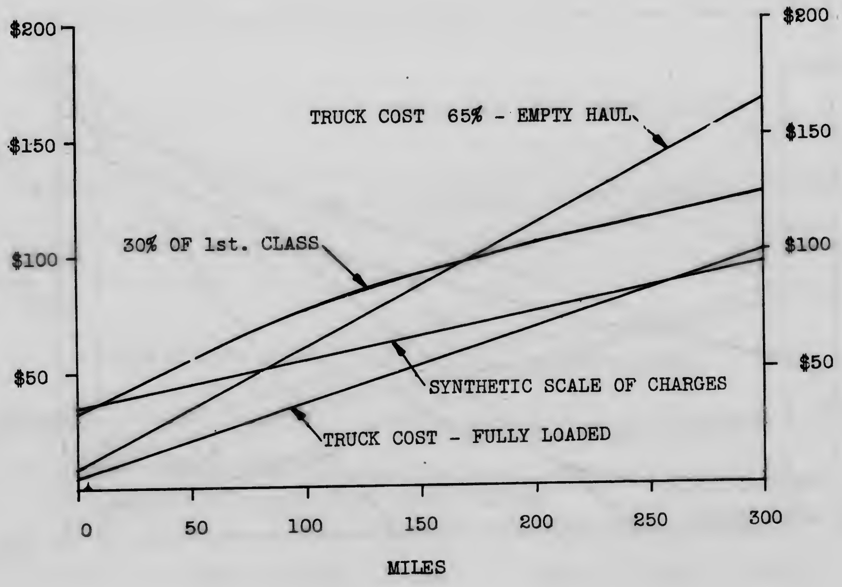
MISCELLANEOUS MANUFACTURES
CHARGES FOR HAULING AVERAGE LOAD OF 20 NET TONS

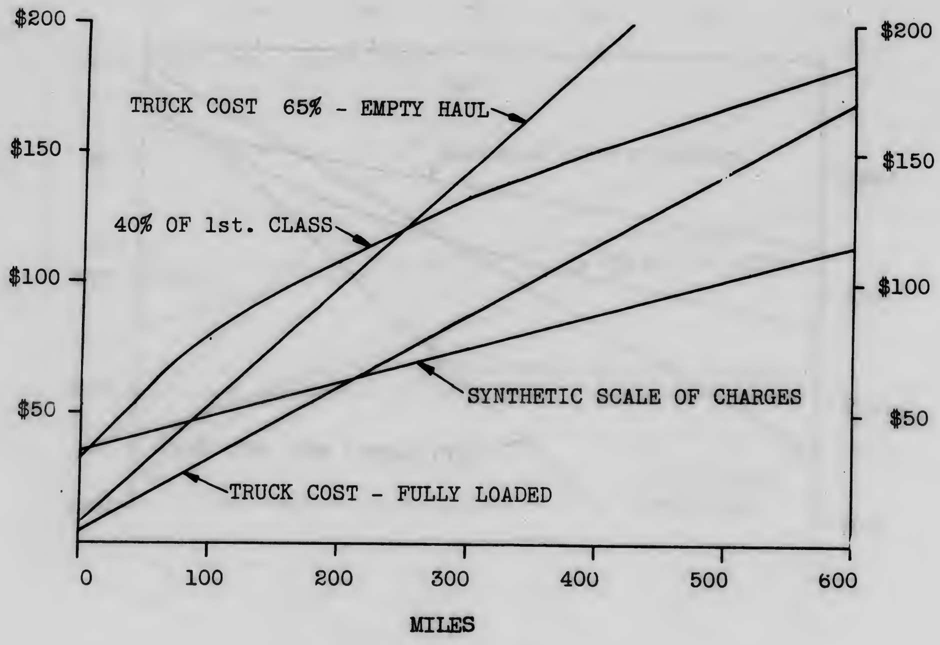




WHEAT
CHARGES FOR HAULING AVERAGE LOAD OF 44 NET TONS

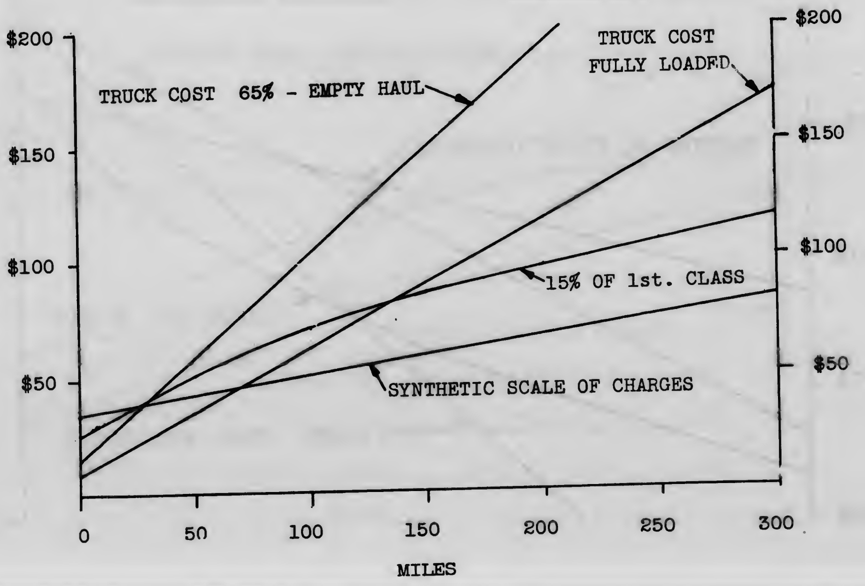
CITRUS FRUITS
CHARGES FOR HAULING AVERAGE LOAD OF 17 NET TONS

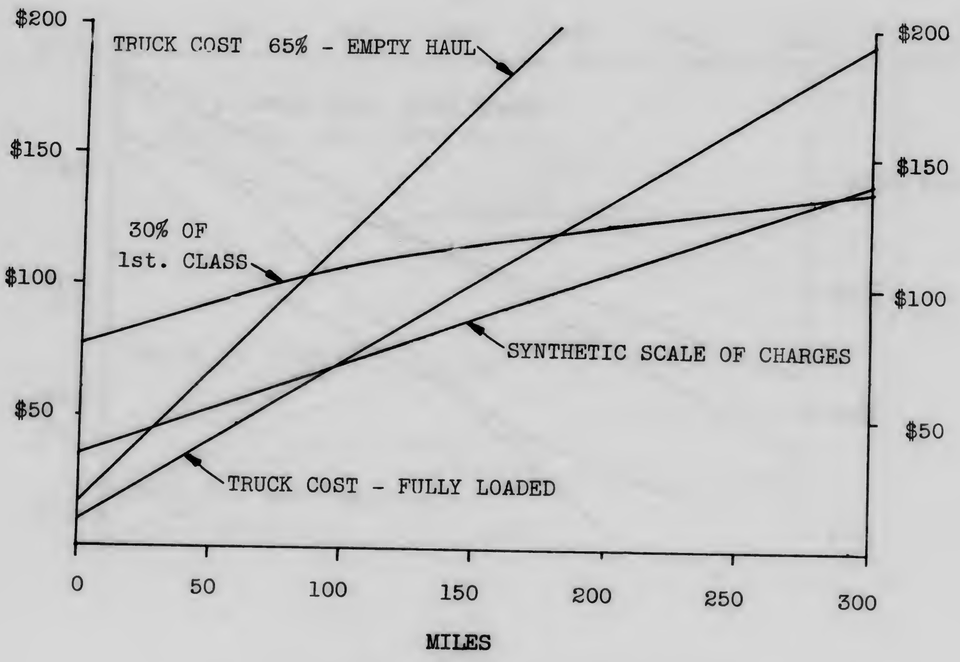




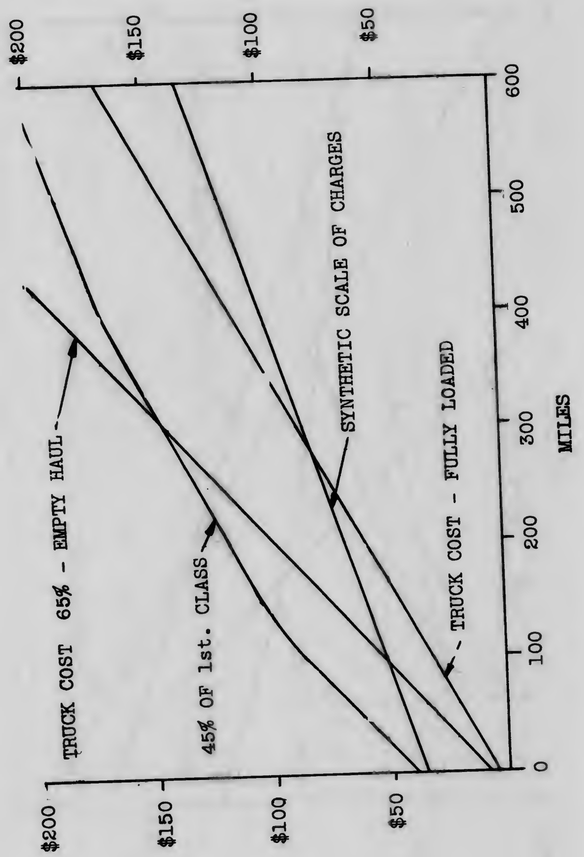
FRESH VEGETABLES
CHARGES FOR HAULING AVERAGE LOAD OF 12 NET TONS

LUMBER
CHARGES FOR HAULING AVERAGE LOAD OF 26 NET TONS

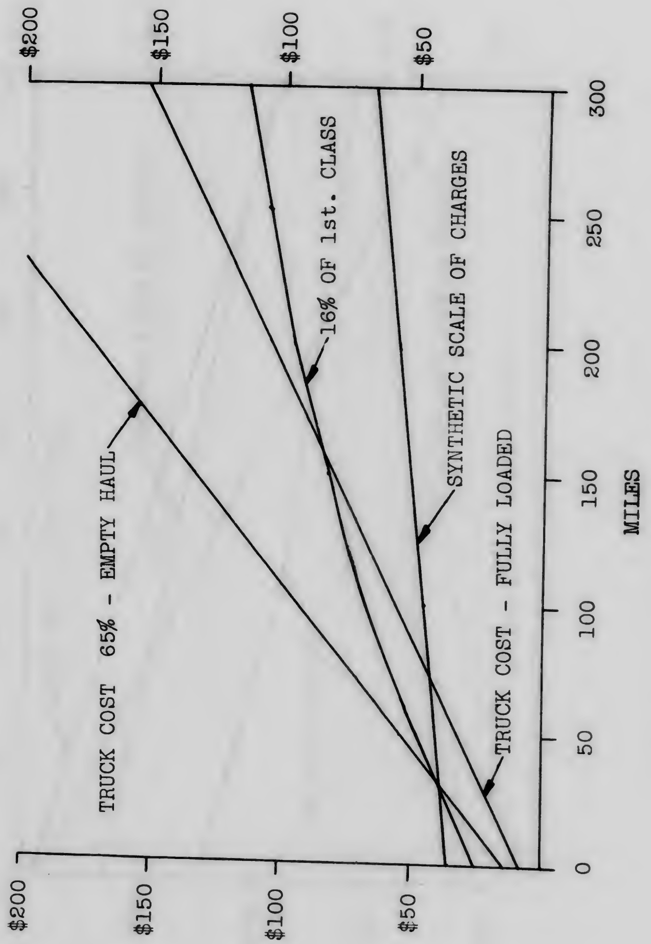




STRUCTURAL MATERIAL
CHARGES FOR HAULING AVERAGE LOAD OF 32 NET TONS

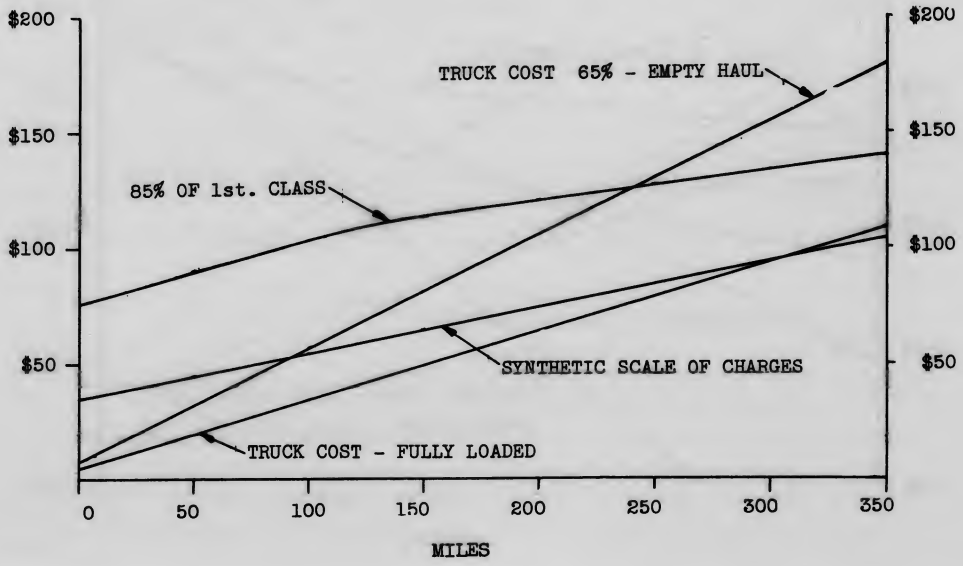


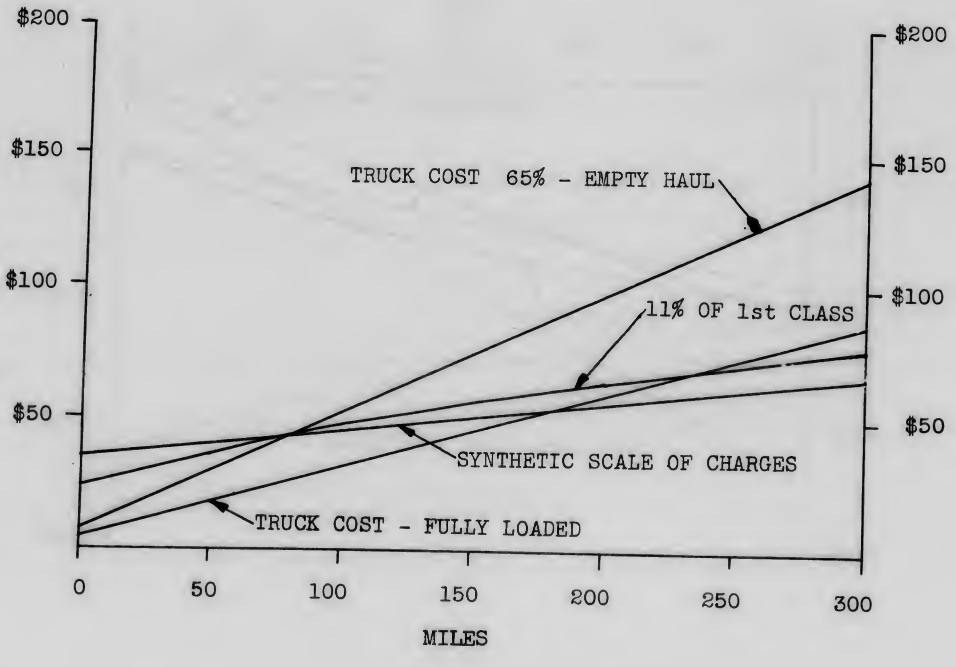
FRESH MEAT
CHARGES FOR HAULING AVERAGE LOAD OF 12 NET TONS



WHEAT FLOUR
CHARGES FOR HAULING AVERAGE LOAD OF 24 NET TONS

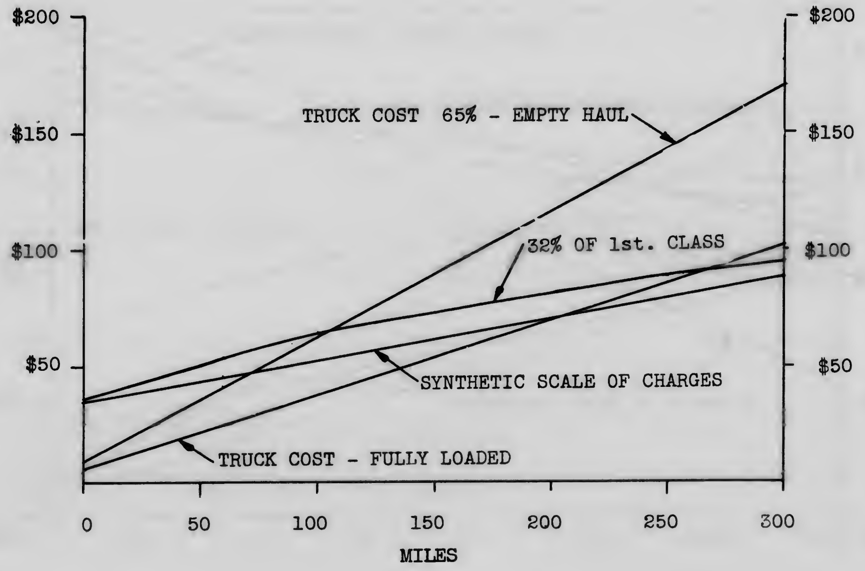
AUTOMOBILES
CHARGES FOR HAULING AVERAGE LOAD OF 15 NET TONS

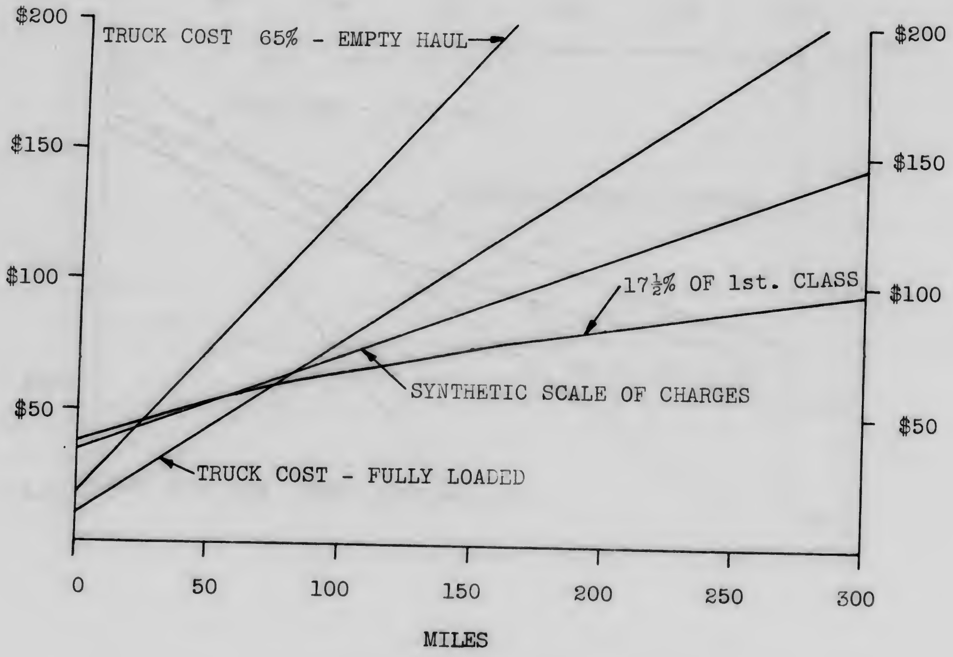




KINE
CHARGES FOR HAULING AVERAGE LOAD OF 15 NET TONS

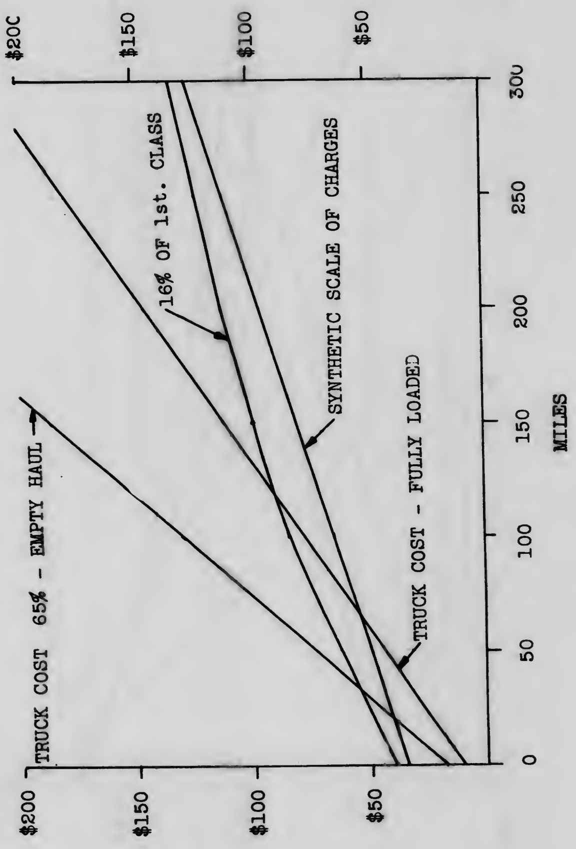
POTATOES
CHARGES FOR HAULING AVERAGE LOAD OF 18 NET TONS



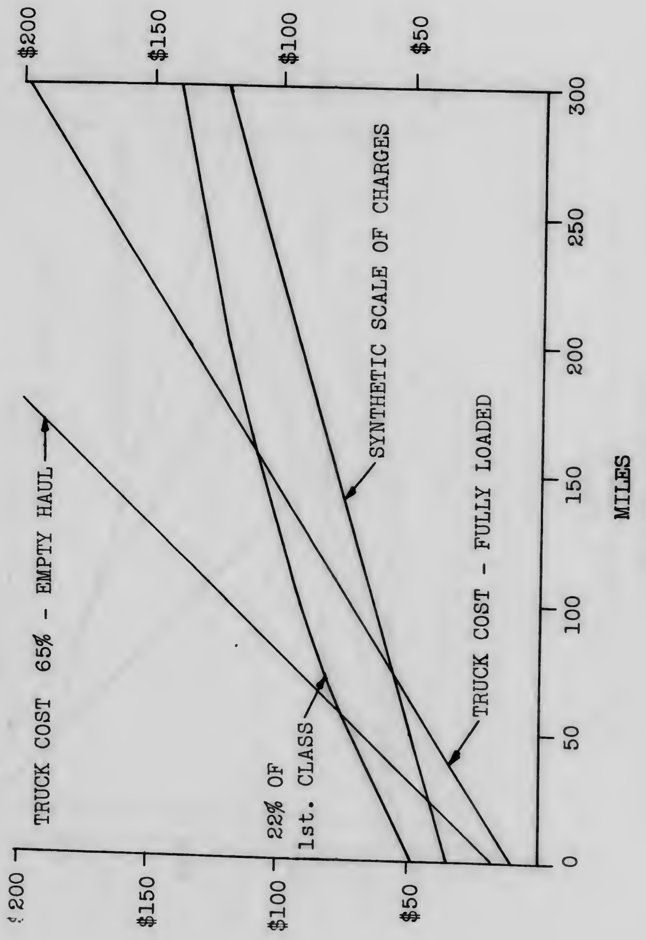


CEMENT
CHARGES FOR HAULING AVERAGE LOAD OF 39 NET TONS

CORN
CHARGES FOR HAULING AVERAGE LOAD OF 40 NET TONS

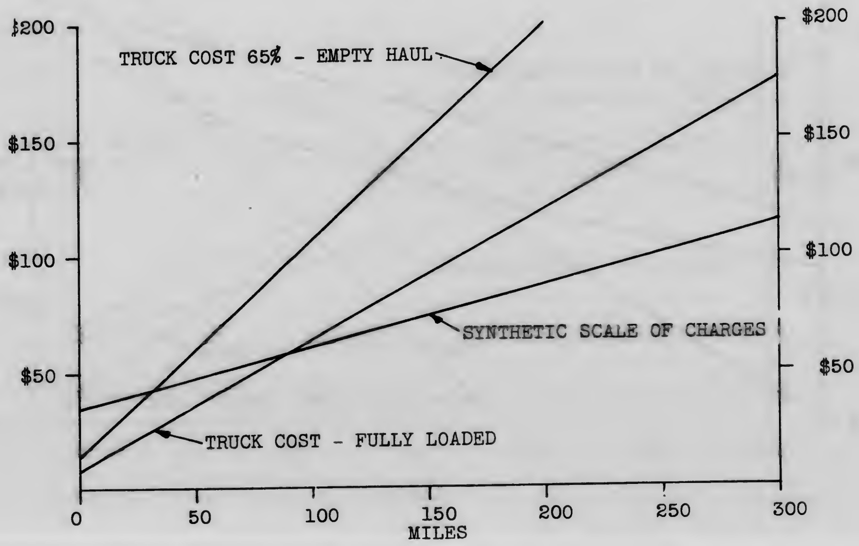


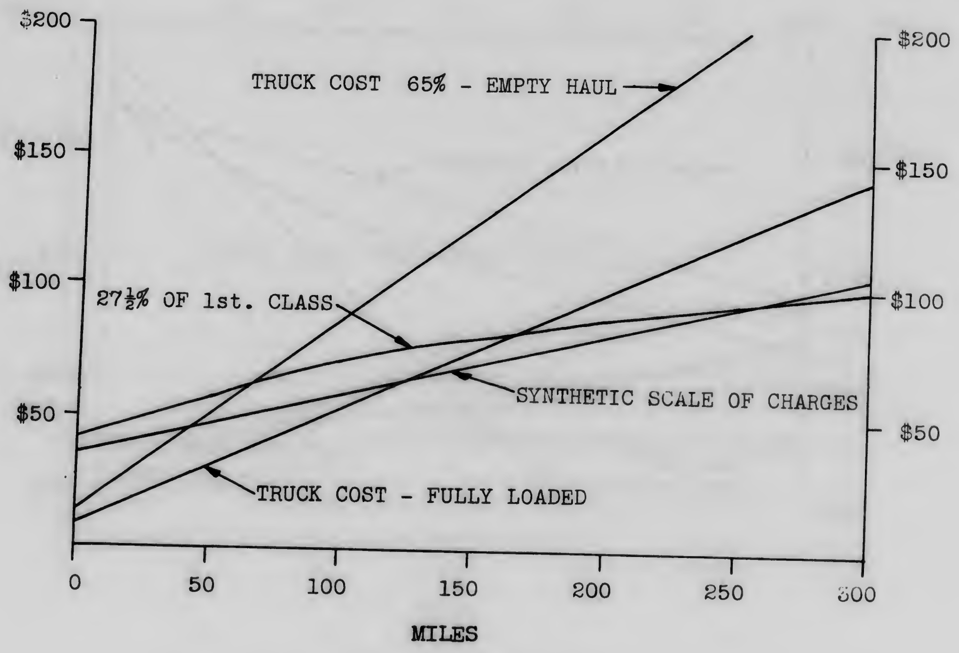
ROAD AND FUEL OIL
CHARGES FOR HAULING AVERAGE LOAD OF 34 NET TONS



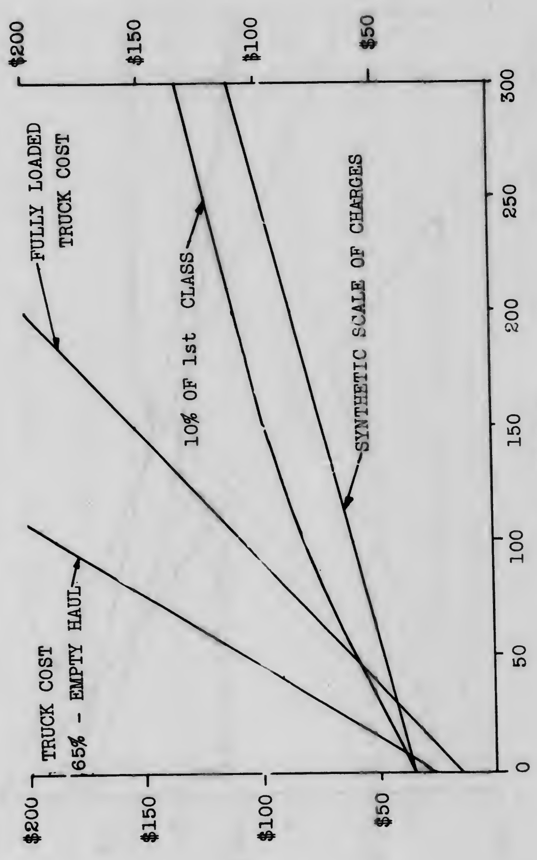
MANUFACTURED FOODS

CHARGES FOR HAULING AVERAGE LOAD OF 27 NET TONS

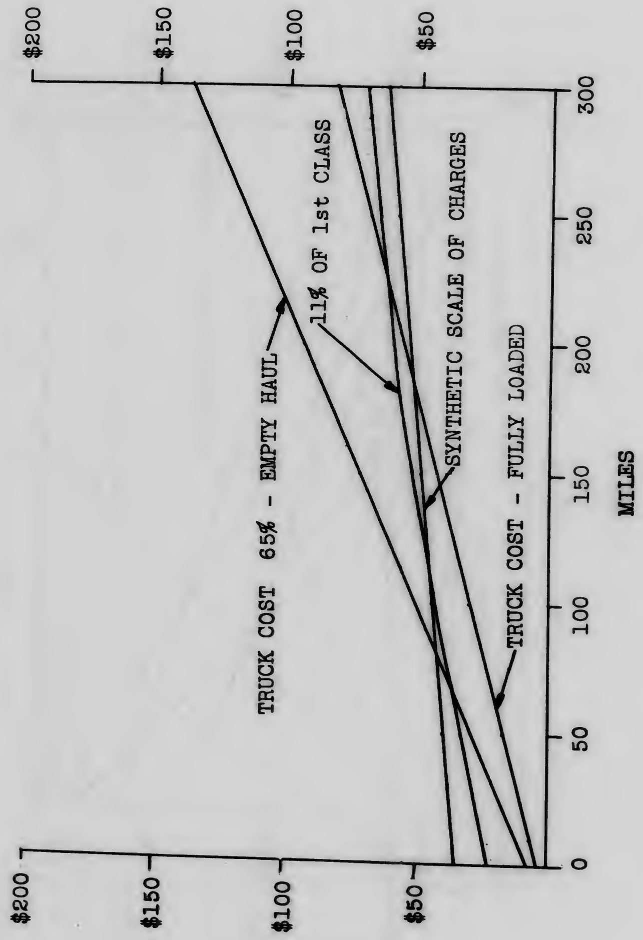




CANNED GOODS
CHARGES FOR HAULING AVERAGE LOAD OF 23 NET TONS

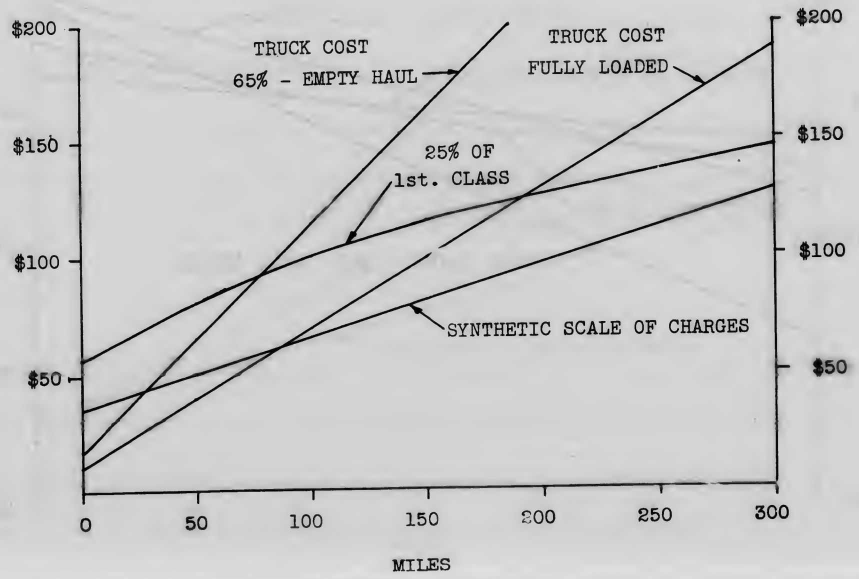


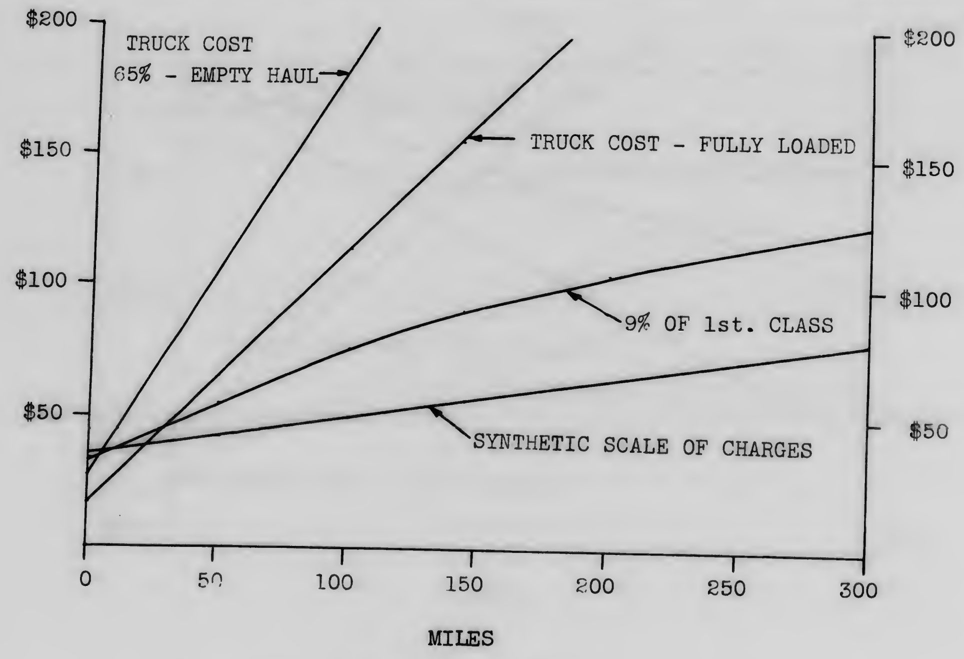
ORES
CHARGES FOR HAULING AVERAGE LOAD OF 49 NET TONS



SWINE
CHARGES FOR HAULING AVERAGE LOAD OF 11 NET TONS

SUGAR
CHARGES FOR HAULING AVERAGE LOAD OF 31 NET TONS

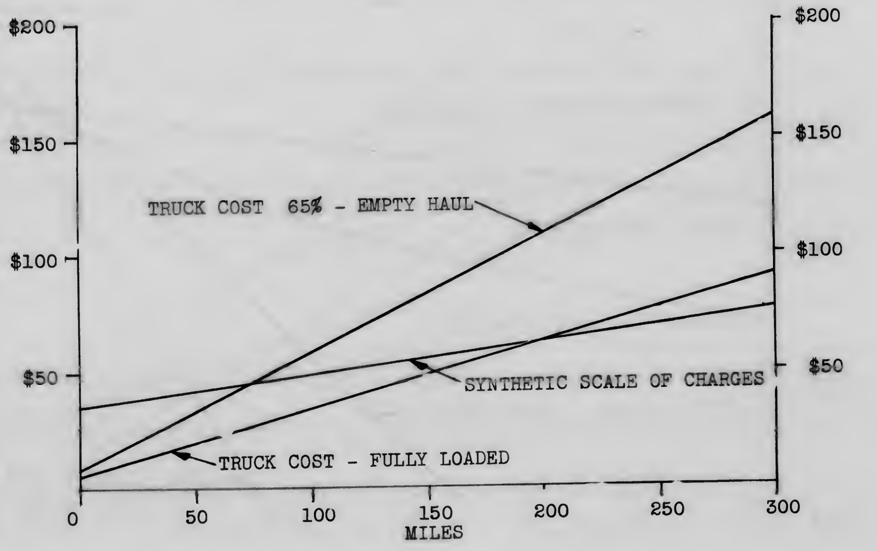


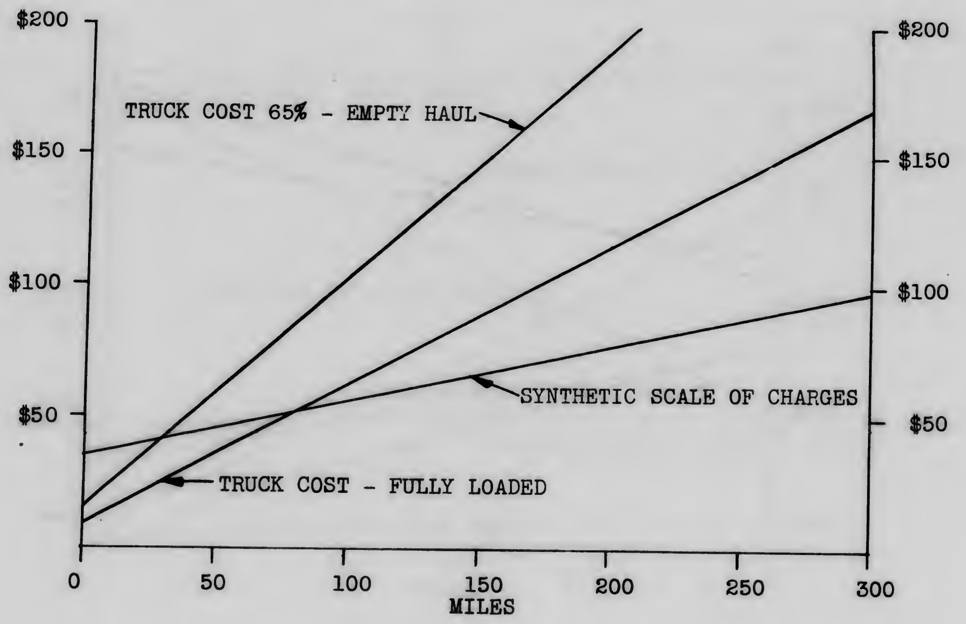


SAND AND GRAVEL
CHARGES FOR HAULING AVERAGE LOAD OF 56 NET TONS

FIBRES

CHARGES FOR HAULING AVERAGE LOAD OF 13 NET TONS



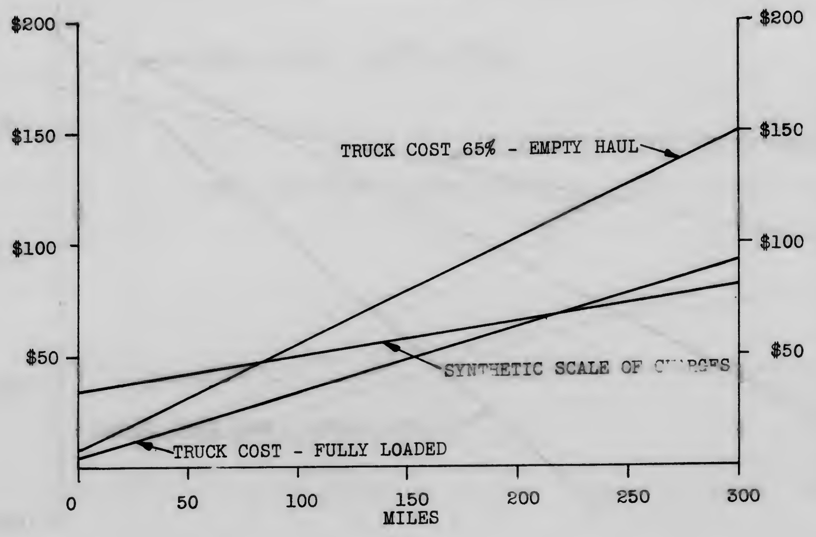


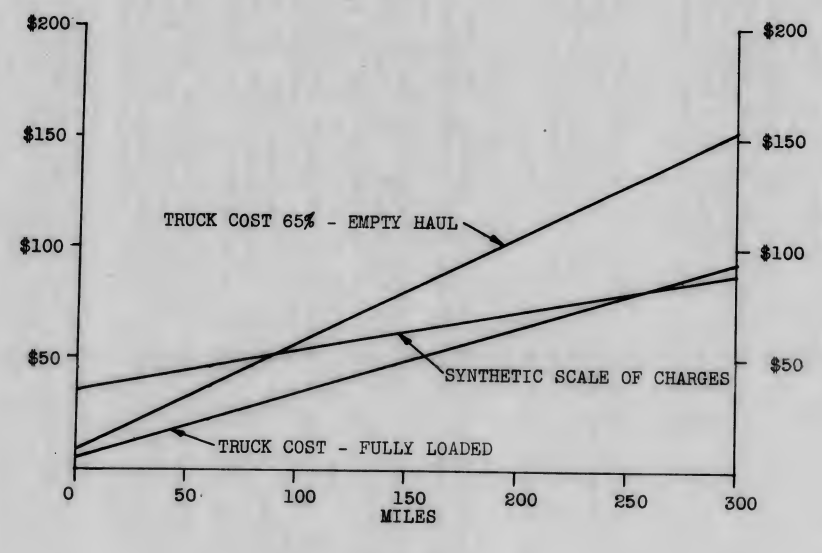
PRINTING PAPER

CHARGES FOR HAULING AVERAGE LOAD OF 25 NET TONS

FURNISHINGS

CHARGES FOR HAULING AVERAGE LOAD OF 14 NET TONS





TEXTILES

CHARGES FOR HAULING AVERAGE LOAD OF 14 NET TONS

XV PRICE STRUCTURE

52. Definition. A rate structure broadly includes the entire system of carrier prices. Here it is used in a more restricted sense to cover the system by which rates on individual shipments are related to one another in accordance with the service required for the transportation of each. The purpose of classification is to determine the transportation burden which each commodity or group of commodities shall bear in relation to others, whereas it is the office of the rate structure to provide a means whereby the characteristics of shipments affecting costs (principally weight, bulk and distance) may be evaluated and priced more or less automatically. Under present rate systems, owing to the inclusion of "value" and "cost" principles in both classification and rate construction, the two functions generally are not clearly defined.

53. Carrier Structures. The rail carriers of the country, for ratemaking purposes, are grouped into 9 rate territories - New England, Trunk Line, Central, Pocahontas, Southeastern, Western Trunk Line, Southwestern, Pacific Northwest and Pacific Southwest.

These territories function through 7 independent freight bureaus or associations by which joint pricing is conducted and notice of proposed rate changes given competitors.*

These rate territories were originally marked by the limits of the carriers embraced therein.# As the commerce of the nation integrated and consolidation of carriers proceeded, these limits have become more and more artificial. Overlapping of carriers in more than one rate territory is the rule rather than the exception. On the average, each carrier operates in two such territories, some in as many as four. As stated in an earlier connection, over 55 percent of rail revenues are derived from interterritorial traffic.

Although the rate structure of the several territories still reflects some of the conditions under which the several carrier groups were originally constituted, the results achieved are almost identical with respect both to the distribution of traffic and as to the unit revenues of the various commodity groups. For all practical purposes the average statistics of all railways as a single system fairly typify the situation in each territory.

The need for economic parity among territories for removal of the influence of market competition, for elimination of discriminations against cities and communities, and for simplification, points to the conclusion that a uniform price system applying throughout the country is worthy of the most careful consideration.

54. Commodity Structures. Originally carrier rates probably were made as individual transactions. The growth in operations and diversification of traffic, however, soon made necessary more systematic treatment. Until very recently, cost was given little or no specific consideration. It was recognized, of course, that the amount which was shipped and the distance which the goods moved ought to have some bearing on the charge - a recognition which finally resulted in a dogma which is only a half truth that the cost per mile decreased with the distance. In litigation with the States over rates, when the courts sought something more tangible than uncharted judgment by which to determine the issues, resort to cost data became necessary.

In recent years, through the gradual prescription of mileage scales by the Commission, the rate system has begun to assume the general form of a cost structure. The rates, expressed in cents per hundredweight, generally progress, but not in uniform gradation, from a fixed minimum with the distance of the movement.

No definite attempt to prescribe cost rates has been made in ratemaking because of confusion of value and cost principles. Differences in gross weight handled per car, resulting from differences in net loading, voluntary and involuntary, can be considered under the present system only by prescribing a minimum shipment for which the carrier will move the tare weight of the car, and by taking the density characteristics into account in the classification ratings. By neither of these processes can these cost characteristics be accurately evaluated.

55. Effect. The present method of constructing carrier rates has provoked widespread litigation, with the result that much of the transportation pricing is done through the media of law suits. The advent of the motor truck and the revival of water transportation have tended to aggravate the confusion. The facts indicate that the present unplanned system of pricing is responsible for the diversion of considerable traffic which, from a cost standpoint, could be more advantageously handled by the railway.

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* Trunk Line Association, New England Freight Association, Central Freight Association, Southern Freight Association, Transcontinental Freight Bureau, Western Trunk Line Committee and Southwestern Freight Bureau.

# Originally many charters and laws prohibited through rates. It required an act of Congress to make through or joint rates permissive (1866). Later (1906 and 1910) the power to compel through rates was vested in the Commission.

56. Modernization. The objective of a modern price structure will be a system so devised that the charges for shipments of the same commodity will vary with the characteristics which affect the carrier service and cost required, i.e., the weight, the volume, and the distance.

The effect of the characteristics of weight and distance jointly on line costs is measured by the gross ton miles required for the movement of the shipment.

The method by which this end can be accomplished is more complex in statement than it is in application. The steps in such a process may be summarized as follows: (1) The average terminal cost per equated ton, and the average line cost per equated ton mile are respectively increased by application of an operating ratio sufficient to produce a carrier profit, and the results are herein called "average rate factors"; (2) to each of these respective rate factors the rating of the particular commodity determined by the classification is applied to produce the average rate factors of that commodity; (3) since the rate factors are expressed in gross weight units, it is necessary to convert them into net weight units for pricing purposes; this can be done by applying to them the ratio of the gross load (tare weight of the car plus the average load or loads for which the scale is desired) to such net load or loads; (4) the final step is the construction of the scale by cumulatively adding for each mileage block the line rate factor to the constant terminal rate factor.

The proposal is a radical change in the method of ratemaking. Once the form of the structure is set up the present rates may be conformed to it as the occasion or the need for readjustment arises, and commercial disturbances avoided.

The desire to preserve the existing structure, however, should not be permitted to blind us to the quite general need for immediate action. The curve of the present rate scales, and of the synthetic charge scales, as well as the returns to the shipper survey, indicate that the present commodity structures are basically unsuited to present conditions and are driving long-haul carload traffic to the highway on account of price, although, as we shall hereafter see, from a cost standpoint, the rail is the cheaper instrumentality for all save very short hauls. Attempts to meet this situation piecemeal lead to large and unwarranted reductions in revenue at a time when such reductions imperil the stability of the industry and also tend to create unfair discriminations. The situation is one which does not permit further temporizing or attempts to patch a structure which the advent of other transport instrumentalities has made obsolete. Steps which are necessary to meet the situation

will unquestionably change present rate relationships or they will formally recognize changes which the new conditions have wrought.

XVI TARIFFS

57. Purpose. The object of a tariff is primarily to advise a prospective customer of the carrier's price and secondarily to fix definitely the rates which are legally applicable for a movement. There are over 5 thousand commodities which move in carload lots. There are over 34 thousand individual points in the United States between which they can move, and over 1 thousand common carriers over which the commodities can move. The correlation of the multitude of combinations which arise out of the many variable elements to accomplish the foregoing objectives presents a problem, the chief difficulty of which lies in the avoidance of complexity upon the one hand and multiplicity upon the other.

58. Present Tariffs. There are currently on file with the Interstate Commerce Commission about 500 thousand tariffs and supplements containing about 2 1/2 million pages. During the year 1934 alone over 100 thousand tariffs were filed. Each railway issues tariffs which apply only locally on its lines and with respect to only certain named commodities. It joins with other railways in publishing joint tariffs through common agents and in many cases these common agents join with one another. It is quite generally necessary that railways participate in tariffs promulgated by the tariff agent in territories not directly served by their lines. Maintenance of a tariff file, much less a corps of experts to run it, is wholly out of the question except in large organizations - shipper or carrier. Indeed there are few if any places outside the tariff files of the Commission where anything approaching completeness is attained.

Present-day tariffs are among the most technical and complicated documents extant. The necessity for attaining the secondary objective of legal definiteness largely obscures the primary objective of publicity. The need for this condition arises entirely out of the lack of systemization - a condition difficult to attain under present conditions in view of the large number of publishing agencies including carrier local publishings.

59. Defects. The basic defects in present-day tariffs are:

(1) Confusion and multiplicity resulting from the large number of rate systems and publishing agencies;

(2) Lack of a consistent grouping of commodities into a limited number of rating groups;

(3) Lack of a consistent system of grouping shipment movements into a limited number of rate blocks or zones. If rate blocks 60 miles square (such as the equigraphic zones suggested in the supplement to the Merchandise Traffic Report) be used, all possible movements which may take place in the United States fall into less than 60 rate blocks;

(4) Failure to confine classification strictly to a "value of the service" basis and to construct rates strictly on a cost basis; and

(5) Specification of routes made necessary by large number of open routes.

60. Modernization. From the standpoint of every interest, including the carriers themselves, a single uniform transportation rate structure is demanded. All interstate rail tariffs must be filed with and if contested, approved by a single body. With a uniform rate structure there is no reason why all such tariffs, together with those of all other agencies, also cannot be published by a single publishing agency.

If extraneous cost elements, such as density and risk, be excluded and only the element of the value of the service considered, classification can be greatly reduced and simplified. Likewise the grouping of movements into uniform rate blocks or zones based upon commercial market groups is quite feasible and would result in a drastic reduction in the number of such movement groupings.

Multifarious routing should be reduced by the elimination of unnecessary and circuitous routes and the grouping of carrier routes into definite competitive channels.

With these major difficulties overcome, the tariffs covering all rates for all commodities in the United States can be simply and concisely stated within the bounds of a single volume.

The change in the tariff procedure suggested must of necessity take place over a considerable period of time. Here also the framework should precede any change. A grouping of all stations into commercial market areas in a directory is the first step, to be followed by a standard or universal system of mileage blocks or zones. As the occasion arises, all rate changes should be incorporated into the new tariff forms and the other rate structures, beginning perhaps with the class and mileage scale of rates, gradually absorbed into the system.

THE OPERATIONS

XVII STATISTICAL ANALYSES

61. Necessity. Whenever there are more ways than one to perform a given service, or when there exist more facilities than one, or more operators than one by which it can be performed, the need for comparative analysis of operations arises. Among needs peculiarly felt in the transportation industry because of conditions which exist today, may be named:

(1) Scientific budgeting of expense in a time of reduced traffic concurrent with the demand for improved or increased services;

(2) Comparison of the relative utility of facilities, methods and operations of a carrier, or of competing carriers;

(3) Improvement in service and reduction in expenses arising from the development of new transport facilities;

(4) Relation of prices to cost, due to the newly developed ability of the shipper to provide his own transportation; and

(5) Determination of the relative economic utility of various forms of transportation in order to design a properly coordinated system.

Heretofore, statistical analyses have been required only occasionally and it has been found convenient to obtain them by special and postfactum study. The demand now has become continuous, making a system of analysis through current routine wellnigh indispensable.

62. Factors of Utility. The economic value of a given transport agency involves consideration of the utility of the plant, operations and overhead, which are necessary to provide transportation. The activities of a transport agency, for purposes of analysis, may be grouped in accordance with three fundamental classifications:

(1) A function classification which groups transport activities in accordance with the nature of the work done, such as maintenance of plant or transportation of vehicles;

(2) A location classification which groups them in accordance with the place where the work is done, such as station, yard, road or office;

(3) A service classification which groups them in accordance with the objectives of the work done, such as receipt and delivery of freight or its line movement between terminals.

A function analysis is chiefly valuable for budgetary purposes; a location analysis for managerial control and supervision; and a service analysis for pricing and for determining the relative utility of different facilities, agencies, services, or businesses. It is impossible, however, satisfactorily to analyze or to synthesize transport operations in any one of the three classifications or from any single standpoint. Correlation for each purpose is required in practically all cases.

63. Criteria. The utility of an agency, a plant, or an operation is determined by its relative capacity to meet the service demands of commerce at a minimum expenditure of time and money. The primary purpose of accounting is to show the amount which was expended in order to determine the profitability of the enterprise. Accounting systems, including those of transport agencies, therefore, are generally bottomed upon a function analysis of revenues and costs. Upon the other hand, it is the office of statistics, by correlating the volume of service units expended with cost, time and money, to reveal ways whereby the value of the operation or of the service may be increased, or the expenses of rendering it may be reduced. Accounting is concerned primarily with aggregate expenditures of money; statistics with a service unit analysis of those expenditures. Each is indispensable to intelligent operation of a transport system and to the planning of a coordinated system of transportation.

64. Present Accounting. The accounts of railways and interstate pipe lines, and a relatively few water carriers are kept in accordance with the classifications prescribed by the Interstate Commerce Commission which, however, are designed primarily to reflect the operations of each type of carriers. The great majority of water and highway carriers do not keep accounts in accordance with a uniform classification. A system of uniform accounting is prerequisite to any study of the comparative utility of various forms of transport agencies.

65. Present Statistics. The Commission prescribes for railway carriers statistical reports generally reflecting the services accorded, with respect to traffic and operations. These statistics usually are kept and reported for the system of the carrier as a unit, which makes it practically impossible to correlate accurately traffic statistics or operative service units with expenses from a function, location or service standpoint.

Individual railways, in varying degrees for their own managerial purposes, attempt to make such correlations, and special studies frequently are offered in litigated proceedings before the Commission or courts. In few if any cases are expenses and service units correlated currently. The Commission requires very few statistics to be kept or reported by carriers other than railroads and so far as it appears, few are kept by these carriers for their own purposes.

66. Modernization. Information which modern exigencies and good judgment demand shall be made available to carrier and governmental authorities, for management, regulation and planning may be described generally as follows:

(1) The financial results, revenues, expenses, income and perhaps profit and loss of each kind of carrier business, such as passenger traffic, (coach, reserved, or suburban) mail, express or merchandise traffic, freight traffic, generally or specifically with respect to such important traffics as perishables, coal, petroleum, etc.;

(2) The volume, service units, and costs of handling traffic generally and with respect to particular commodities, for basing rate scales upon such costs, and for classification rating upon the "value of the service" principle;

(3) The aggregate and unit cost of operating an individual facility or a group of such facilities, such as a station, a branch line, a specified freight or passenger train, over a given period of time, etc.;

(4) The cost of operating different types of facilities in different kinds of services, such as steam, Diesel, gasoline or electric power units, passenger, head end or Pullman cars, box, tank, flat or container cars, heavy or light duty trucks, tractors with semi or four-wheel trailers, etc.;

(5) The cost of any particular operation at any particular city or on a specified division, such as receipt or delivery of freight, classification, transfer, interchange or line movement of vehicles, etc.;

(6) The cost of performing a particular service, such as switching a specified plant, icing cars at a given terminal, cross-town switching, etc.;

(7) The comparative value (from a cost and service standpoint) of different types or sizes of trains in different classes of services or conditions, or the use of different kinds of material, different methods, or different kinds of personnel, etc.

In the coordinated transport system toward which we should aim, the prices, of necessity, if not of carrier volition, will tend to be made with respect to the cost of the most efficient instrumentality for each individual service. The relative utility of the several instrumentalities will always be in the foreground. It is necessary, therefore, that any system of statistical accounts be uniform in its application to all modes of transportation, since comparative analyses are essential not only to intelligent pricing, but also to the design of a planned transportation system, although the need for detail and refinement diminishes inversely with the size and extent of the operations, since the simpler the operation the less complexity there need be in accounting for it. For this reason the statistics and records required of small operators - rail, water or highway - may be made much simpler than would appear from the above description, which deals primarily with the large and complex operations.

XVIII CARRIER INQUIRIES

67. Statistics Used. The statistics used with respect to the several surveys were compiled by the carriers who replied to the several inquiries, supplemented in some cases by those reported to agencies of the Federal government. As far as possible the statistics either of traffic or costs represent the actual results of the base year's operations in the aggregate. Due to the facts described in the preceding sections, even these aggregate statistics were not always available and in many cases separation between location or service had not been currently maintained. Wherever feasible, these separations were made upon the basis of actual records and in other cases upon formulas or sample tests.

68. Unit Costs. The cost analyses are of necessity special postfactum studies. Since many of the carrier functions, particularly those of rail carriers, are joint between two or more locations or services, analyses required distribution upon the basis of "use factors" employed in each.

69. Statistical Procedure. In the following analysis of operations, the fact must be kept in mind that operations and their costs can and generally must be viewed from the standpoint of three distinct classifications, each of which covers the entire field and completely overlaps the other two. Sections 72 to 103, immediately following, deal with a function analysis of the accounts - capital servicing, total operating costs, cost of maintaining way and structures, cost of maintaining power, cost of maintaining vehicles, cost of conducting transportation, and general, traffic, and tax expense, in each of which only the cost of the particular function, without overhead, is stated.

In sections 104 to 107, following, however, location and service analyses are made, including in each case the total cost of the operating functions of maintenance, transportation, traffic, general, and tax, with respect to particular services or locations in yards, road, line, and terminal.

XIX NATURE OF OPERATIONS

70. Extent. Surveys indicate that, omitting from consideration the highway operations, present rail, water, and pipe line transport facilities are ample to handle several times any probable traffic, and that judged by capacity alone, there will be no need for additional facilities in the near future. The need will arise, however, when the cost of supplying and maintaining new facilities is less than the economies made possible by the elimination of present inefficient and obsolete facilities, which in such cases should be abandoned. The cost of maintaining the surplus of transport facilities ultimately will fall upon the nation, and in determining the increase of those facilities, its interests rather than the interests of an individual carrier or an individual shipper or community should prevail. A toll upon the nation's commerce, which is created by the construction of additional facilities of whatever type, is justified only when the service thereby made available is not and cannot be furnished by present facilities, regardless of how advantageous it may be from a standpoint of the individual carrier or community.

XX CIRCUITY OF MOVEMENT

71. Directness. Data indicate that the average rail carload moves approximately 11 percent further than would be necessary, if it were moved by a direct line route in common use. Some degree of circuity is inevitable so long as there are competitive routes, but the situation is not one which should be viewed with complaisance, since unquestionably the

11 percent additional service is reflected to a considerable degree in the rail cost. On the other hand the most direct route is not always the most economical; grades, congested lines, or terminals and other operating characteristics are to be considered.

Intercarrier traffic is the cause for a large amount of this waste of transportation, due to the number of routes usually kept for movements. This traffic would naturally seek the direct route if it were not for competitive carrier effort to deflect it-a condition which, from the standpoint of the individual railways involved, may seem in many cases actually vital to their interests. From the wider public standpoint, it would be cheaper to give a direct subsidy to protect those interests than it is to provide the subsidy indirectly plus the waste entailed.

Cooperative action of the carriers to form a limited number of routes for the movement of all intercarrier traffic would go far to reduce if not eliminate rail circuity to the extent that it is wasteful.

XXI OVERALL COSTS

72. Investment. Using "book cost"(without depreciation) as the equivalent of investment and apportioning investment upon an expense basis,* we find that the capital in freight facilities is about 20 billion dollars, of which 18 billion are rail,# 3/4 billion pipe line, and 1/2 billion water carrier. In addition, there are approximately 2 billion dollars invested in motor trucks, an unknown part of which is devoted to intercity transportation of freight.

73. Servicing. The cost of capital servicing may be viewed from either the accrual or the cash basis. The former basis assumes that over a period of years, in order to attract necessary new capital, present capital must be adequately serviced, and that the obligation is cumulative, since in the long run deficiencies of any year must be made good in a later year. Upon this basis, the cost of capital servicing is calculated whether or not it is earned or paid.

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* Maintenance expenditures, probably a better basis, would increase the freight proportion about 5 percent.

# Throughout this and following sections, only freight proportion is considered - passenger proportion, about 7 billion dollars, and a passenger operating cost deficit of 200 million dollars are not included.

If 5 percent be deemed ample to service the investment, which is exceedingly doubtful, about 1 billion dollars per year is required for this purpose, which amounts to 2/3 of the 1932 rail revenue; and about 1/4 of the average rail revenues of the 12-year period. It was earned by the railways in 5 out of the 12 years. Return of business conditions similar to those which then existed would enable the carriers to service this capital if some permanent reductions in operating expenses could be effected. If substantial economies can be made, freight transportation should permit a service of 6 or 7 percent upon the investment.

74. Functions. The functions which go to provide transport service may be grouped into three general divisions: (1) Maintenance of the facilities used in the service; (2) transportation, i.e., utilization of those facilities; and (3) overhead administration and supervision of the operations and maintenance. Each of these general functions presents several phases - thus maintenance has to do with roadway, power, vehicles, and stations. Transportation activities embrace assemblage, road movement, and station service. Overhead activities cover administration and taxes. In this and the following section, the total cost, excluding only capital servicing, will be treated and only from the standpoint of the three general divisions. The sections immediately following will deal separately with the activities embraced within each of the latter.

75. Function Costs. Operative cost per net ton mile (rail distance*) of rail carriers was 8.3 mills; of water carlot carriers, 6 mills; of water cargo carriers, 1 1/4 mills; and of pipe lines, 3.2 mills. These costs do not include interest or expenditures made by others than the carriers (or operators) of the facilities. The difference between the railway and common carrier waterway cost, 2.3 mills, rests entirely in maintenance cost, the transportation and overhead costs being practically identical. The pipe line has relatively little line cost. Its chief cost is depreciation, which is included in maintenance. The cargo water carriers undoubtedly provide the cheapest form of transportation as it is presently conducted.

XXII CARRIER FIXED PLANT

76. Necessity. Both railways and pipe lines provide and maintain a private way over which to conduct their operations. Water and highway carriers use public ways and any cost of maintaining the way is provided in the first instance out of the public treasury. Any carrier expenditures in reimbursing the government for this cost are in the

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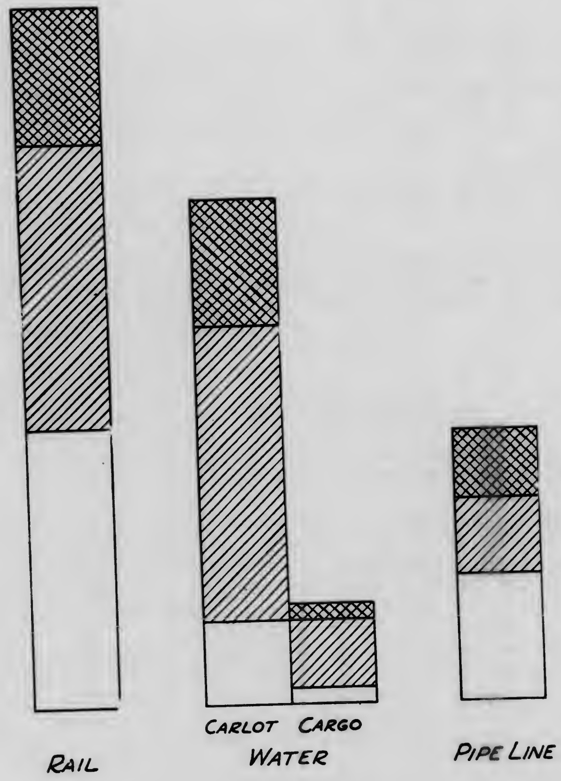
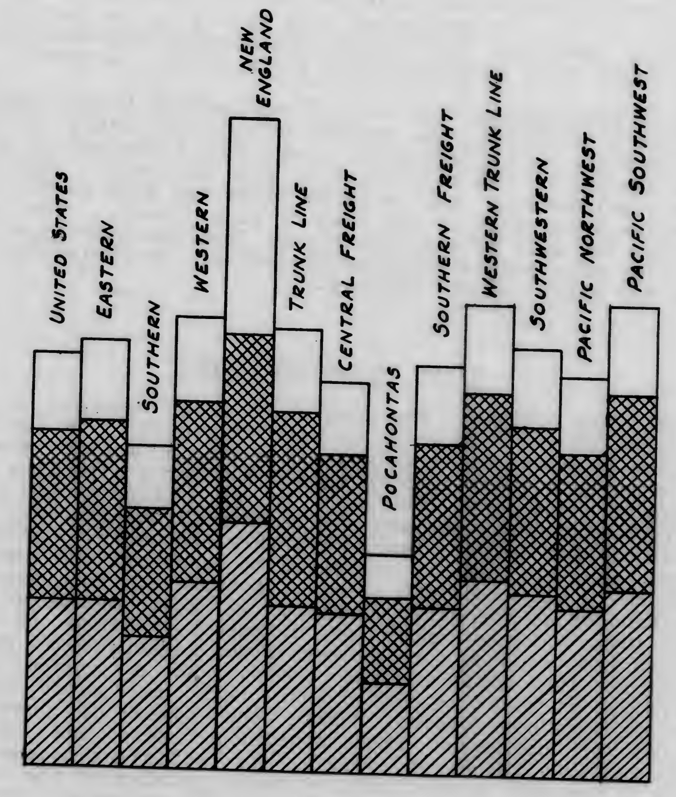
* In order to reduce costs to a common unit for comparison, the ton miles of water carriers have been converted into the number of ton miles which would have been necessary to provide the same service by rail.



COMPARATIVE CARRIER FUNCTION COSTS PER NET TON MILE

LEGEND
□ MAINTENANCE
▨ TRANSPORTATION
▩ OVERHEAD



COMPARATIVE RAILWAY FUNCTION COST PER EQUATED TON MILE

LEGEND
▨ MAINTENANCE
▩ TRANSPORTATION
□ OVERHEAD

form of tolls, licenses or taxes, which often are mixed with a general tax obligation. The extent to which these carriers are subsidized - that is, the extent to which such payments fall short of completely reimbursing the government - is the subject of an investigation and report by the Section of Research, and was not considered herein, the costs shown being confined to those directly borne by the carriers.

77. Maintenance. The cost of maintaining fixed property absorbed 9 percent of the revenue of rail carriers; 2 percent of water carlot carriers; less than 1 percent of water cargo carriers; and 14 percent of pipe carriers. The cost of this maintenance per mile of route was $940 in the case of railways and $316 in the case of pipe lines. The rail cost per ton mile is slightly higher than the pipe line cost Pipe line maintenance consists largely of depreciation, the rates for which are not uniform.

XXIII TRANSPORT POWER

78. The Problem. The problem of power centers around adaptness to the load which it must transport. In the case of cargo carriers it is relatively a simple matter whether the cargo be a train load, a vessel load or a pipe line run. In any of these cases, the load is determined by the power available and hence maximum utilization is obtainable. The carlot carrier is far less favorably situated. Being a common carrier, it is obligated to serve all who come and practically all kinds and sizes of shipments. To attain the same economy as the cargo carrier, it must assemble into cargo loads a large number of shipments. Since it must operate its trips on more or less fixed schedules, it cannot adjust the load moved to the power. As a result quite generally, at least in 1932, both rail and water carlot carriers were overpowered. With the types of power and methods of operation then available, this was largely unavoidable. The cargo carrier is efficient because its power is adapted to its load. A basic problem of the carlot carriers, particularly the railways, is to devise types of power and methods of operation which will make it possible to accomplish the same end.

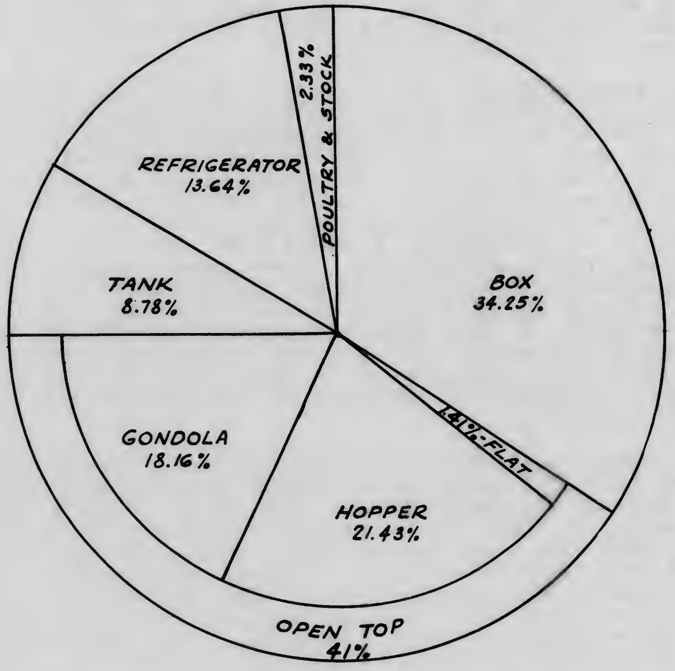
79. Present Capacity. From the water carrier survey, it appears that the carlot carriers utilized about 44 percent of their capacity in 1932, while from the carload survey, it appears that the rails utilized about 25 percent of their power capacity. The extent to which the rail train is overpowered could not be calculated accurately from the data. Gauged entirely by the weight of the locomotives required to transport the load and for the United States as a whole, the largest tonnage train was the manifest train.

Using the average weight of the locomotive in this train and the net tons which were handled therein as bases, it appears that the way train power is utilized to two thirds and the branch line power to one half its capacity.

80. Maintenance. Power maintenance expense of rail relatively is about 80 percent higher than that of pipe lines. It aggregated over 10 percent of rail costs and 8 percent of revenue, 52 cents per train mile and not quite 2 cents per car mile (all trains). The foregoing costs deal with all units, road and yard. The road cost expense per train mile was 37 cents for all power maintenance and 35 cents for locomotive maintenance.

81. Modernization. As a cargo carrier the railway approaches in efficiency and utility the water carriers. Loss in time as well as great expenditures of money are occasioned when the cargo methods of transportation are applied to carlot movements. The power survey was designed to sound the possibilities of a carlot transport service as distinct from a cargo service, the key to which lies in the possibility of developing a small power unit which would move carlot traffic economically. Data were sought from every manufacturer abroad as well as in America, who the Section was advised might be capable of producing such a unit. A number of these manufacturers were good enough to devote their engineering staffs to the problem and submitted the result of that consideration in the form of concrete proposals, accompanied by estimates of cost, maintenance and operation expenses.

The survey necessarily was a pioneer one and the results obtained were not sufficiently conclusive to suggest other than a program of investigation. It does indicate the possibility of light power cars and locomotives for carlot service which will speed that service, both on the road and in the terminals by the practical elimination of yards. It is also claimed by the manufacturers that maintenance and operation of such vehicles will prove more economical than the heavy locomotives presently employed. The opportunity for technological advance in this field is promising provided, as in all other areas of research, the conventions and inhibitions of experience and common usage are disregarded.



DISTRIBUTION OF RAIL TRAFFIC AMONG TYPES OF EQUIPMENT
DECEMBER 13, 1933

XXIV TRANSPORT VEHICLES

82. Present Vehicles. Cost of handling the tare weight of the loaded freight car and of the empty car was greater than the cost of handling the net load. The inutility of the present unit results in part from the following characteristics: Excess weight of the vehicle itself; narrow limitations with respect to its ability to handle various kinds of commodities; lack of conformity of its volume and weight-carrying capacity to commercial sales units; insecurity of the lading; and sluggish movement.

83. Containers. Within recent years there have been developed a number of units designed for coordinated freight transportation. The most successful of these units appears to be a container which is quickly and cheaply transferable from rail to highway and waterway vehicles. The relative advantages of this type of vehicle as compared with the present freight car will be discussed in detail in the following sections.

84. Weight. Of vital importance to every carrier is the amount of dead or tare weight which must be moved in order to transport the payload. It costs just as much to haul a ton of dead weight as to haul a ton of payload, and for each ton of tare eliminated a ton of payload can be carried at no increase in the transportation cost. The expense of the non-paying load is so large a part of the total transportation cost, that drastic action in weight reduction of rail vehicles is imperative. This can be accomplished in three ways - by decreasing the tare weight of vehicles through the use of superior materials and improved design, by increasing the average load carried on all cars, and by reducing the empty haul.

85. Versatility. The ideal transportation vehicle would be one which would efficiently carry any kind of freight under all conditions. With such a vehicle the excess ton miles which now accumulate, due to carriers hauling empty equipment long distances because it is not suitable for the particular commodities offered for shipment, would be eliminated.

Properly designed containers would increase the efficiency of freight carrying bodies. Omitting for the time being the question of size or capacity, it is possible to build a rugged container of light weight which will carry with equal facility all dry materials - either bulk or packaged. The same container can be properly insulated at a moderate increase in original cost, provision being made for installation of heating or refrigerating equipment, when and as required. An analysis of all commodity carloadings for the year 1933 indicated that two sizes of containers would efficiently move all commodities, loading respectively 2 and 5 to the flat car.

86. Adaptness. The evidence indicates that modern business requires quantity movements of commodities in smaller lots than now are required by the carload minimum weight provisions. The tendency toward quick turnover, reduced inventories, and small but more frequent shipments throughout industry has been of increasing importance for more than a decade. But curiously enough, for operative economy, the size of the freight car has continued to increase. A solution to the problem lies in the use of containers, which preserve the economy of the present large car chassis and also meet the shipper's requirements.

87. Dependability. Equipment manufacturers have been active during the past several years in developing equipment which contributes to the dependability of the freight car. Modern draft gears, air brakes, non-harmonic springs, cast steel parts, non-friction bearings, and improved design of the many parts which make up a freight car all help to produce a car in which commodities are carried with security.

A further aid to the security of lading is obtained when containers are substituted for present car bodies.

88. Accessibility. A characteristic of transportation vehicles which directly affects every shipper is the cost and time involved in packing, crating, stowing, unloading, and transferring freight shipped in quantity lots. In many cases, the aggregate cost of these elements exceeds the transportation charges. It is possible for the transportation agencies to reduce the expense which shippers now incur, as well as to speed up transportation service, by providing vehicles in which goods can be readily loaded and unloaded.

By the use of skid platforms and by loading containers directly at the end of an assembly line, or, at point of production, much handling would be eliminated.

The cost of initial loading and final unloading can be materially reduced by providing a container which permits mechanical handling of materials. Given such containers to load or unload, shippers can effectively use various sorts of material-handling equipment to perform the work quickly and at low costs.

Any body designed to carry freight can be made accessible by the inclusion of properly designed doors, but unless the body is demountable, in many cases it cannot be delivered at

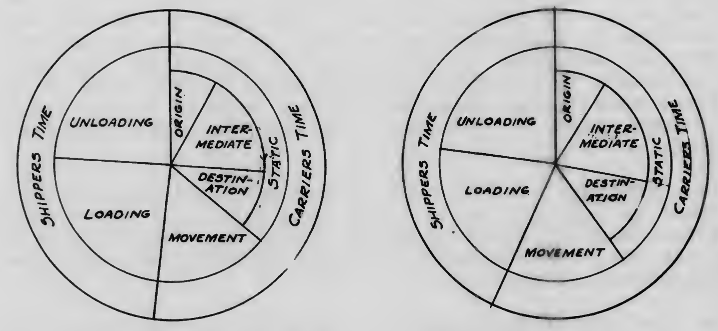
the point where it will be most efficiently loaded or unloaded. The container thus has a unique advantage over a body permanently attached to a vehicle.

89. Mobility. The quality of accessibility in the design of a freight-carrying body is linked with that of mobility. The fact that a motor vehicle receives a full load of freight at the shipper's door, and delivers it the same way results in a substantial saving in transportation cost to off-track shippers. To ship by rail, at present the goods must be loaded in a highway vehicle, moved to the team track, and there transferred from the highway vehicle to the freight car. Such effort is entirely unnecessary when containers are used.

90. Utility. About half of the time of loaded cars is now spent in patron's hands. The result is that the average car moves about 10 thousand miles per year, or less than 30 miles per day, whereas motor freight vehicles average over 25 thousand miles per year.

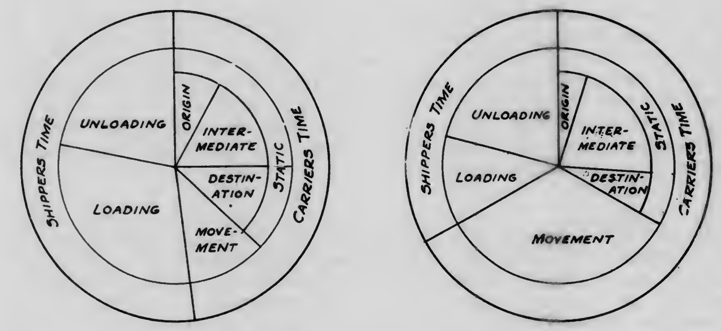
By the use of demountable containers, both railway and highway vehicles could have heavier average loads and the useful service which the railroad car performs would be greatly increased. The freight car consists of two parts - the body which the patron uses, and the chassis which the carrier uses. The same is true of the motor truck. The cost of interest, depreciation, and repairs upon the average freight car amounts to about 1 dollar per day of which 65 cents is chargeable to the chassis. Thus in order to permit the shipper to use a car body which costs 35 cents per day, the whole vehicle which costs 1 dollar per day is surrendered for two thirds of which the shipper has no use. By substituting containers for present car bodies the utility of the car chassis can be doubled, and a speedier and more economical service produced.

91. Capacity. In 1932 all box cars loaded to 50 percent of both weight and volume capacity, although automobile box cars loaded to 82 percent of volume capacity and 11 percent of weight capacity. Similarly, refrigerator cars loaded to 51 percent of volume capacity and 35 percent of weight capacity, while open top cars loaded to 88 percent of volume capacity and 79 percent of weight capacity. All cars loaded to 57 percent of volume capacity and 63 percent of weight capacity. Taking only the best loading, either weight or



ALL CARS
6 DAYS - 375 MILES

BOX CARS
6 DAYS - 426 MILES



GONDOLAS
6¼ DAYS - 209 MILES

REFRIGERATORS
5.6 DAYS - 1169 MILES

SERVICE ANALYSIS OF RAIL EQUIPMENT
DECEMBER 13, 1933

volume, it was found that all box cars averaged 71 percent of capacity, refrigerator 54 percent, stock 98 percent, open top 97 percent. Present average tenders of commodities can be loaded into containers of the two sizes previously described at a utilization approaching 100 percent.

The data indicate that under present operating methods, which require about half of the total serviceable time for loading and unloading and about 40 percent of the carrier serviceable time, allowing further for six weeks of shopping per year, the 1932 car supply had a capacity of over three times the traffic of that year, and about 50 percent more traffic than was handled in the peak year, 1929.

92. Modernization. The average yearly cost of repairs for all cars from 1920 to 1932, inclusive, aggregated 358 million dollars with an average annual cost per car of $156. Once in each 10 years the cost of repairs equals the original purchase price. The average age of all freight cars on July 1, 1933, was 15.6 years.

Despite the large annual expenditure for freight car maintenance, records are not available which show the distribution of expense according to type or age of cars or kinds of parts. In the absence of such information it is difficult to determine what changes in car design would be justified in reducing repair and replacement expense.

The capital cost of modernization need not prove as great a deterrent as might appear from a superficial examination. The present railway car ownership amounts to about 2 1/4 million cars of which approximately one half are box cars. At an average service life of 20 years each, to maintain this supply would require replacement at the rate of about 100 thousand box cars per annum. In the economic depression the obligation to replace has been deferred so that there is an "accrued liability", the replacement of which soon must be met, aside from all considerations of obsolescence. Each of the new house cars herein suggested, if equipped with multiple body (container) sets, will be the equivalent of two of the present type cars, reducing all elements of maintenance referable to time by one half, leaving out of consideration economies due to lighter weight and greater versatility.

Furthermore, there are many thousand flat and low-side mill gondola cars, the latter having little present utility and the former being utilized in 1932 to but one third the extent of the ownership. These cars for a reasonable expenditure can be converted into container cars with a capacity equivalent to about 140 thousand present type box cars.

XXV CONDUCTING TRANSPORTATION

93. Nature. Transportation in this and the following six sections is used to describe the operation of carrier facilities to provide service. Although there are wide differences in character of facilities employed, these operations may be grouped into three distinct classes: (1) Agency, the operation of station clerical and platform forces in connection with receipt and delivery of freight; (2) assemblage, for gathering, distributing or marshalling of the freight for movement; and (3) movement, the actual conveyance of the freight vehicles between cities.

The cost of performing the foregoing operations by rail and water carlot carriers was each 3 1/2 mills - much higher than the cost of the cargo (water and pipe line) carriers which was 1 mill per net ton mile in each case.

94. Agency. Agency operations consist in the paper work incident to receipt and delivery of all freight and in the physical loading, unloading, receipt and delivery of l.c.l freight. The total amount expended by rail carriers for this service in 1932 was over 150 million dollars and constituted 6 percent of rail revenues and 8 percent of rail costs. The unit costs of carlot carriers, rail and water, were about the same.

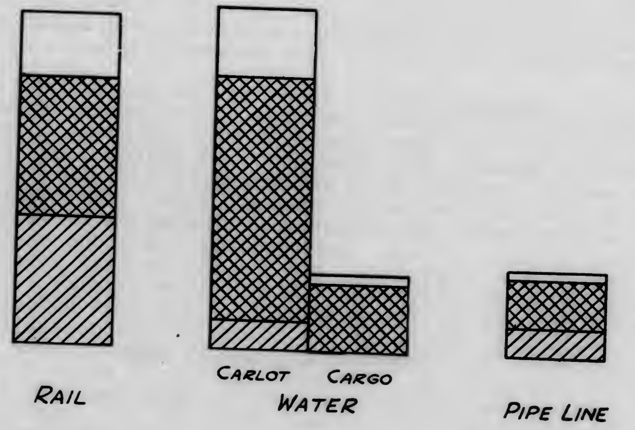
The report of an intensive survey of rail freight station operations, conducted by Mr. F. J. Ginn, is reproduced in the Factual Summary. Conclusions reached by Mr. Ginn are concisely stated by him in his report. These conclusions, so far as pertinent at this place, are:

(1) That speed, accuracy and efficiency would be promoted by utilization of a copy of the bill of lading as a waybill and the elimination of duplication of waybills in assessing rates, in computing freight revenue and other accounting work, and by transferring this work to central bureaus or key stations;

(2) That existing freight stations of all carriers be consolidated and where practical relocated at main receiving or forwarding freight yards;

(3) That highway trailers are the most economical for collecting and delivering l.c.l. freight and for transfer between stations;

(4) That freight commodity classifications be consolidated, rate structures simplified, and the number of tariffs on file at small and joint stations be reduced;



CARRIER TRANSPORTATION COSTS PER NET TON MILE

LEGEND
▨ ASSEMBLAGE
▩ MOVEMENT
☐ AGENCY

(5) That daily, monthly and yearly reports of station costs and productions be kept upon a uniform basis and interchanged between interested carriers.

95. Assemblage. The cost of assemblage for pipe lines was 11 cents per ton, for carlot water carriers 27 cents per ton, for cargo water carriers 1 1/2 cents per ton, and for railways 48 cents per ton or $11.48 per car originated, or about $6.25 per terminal (initial or final) handling. This yard switching cost (transportation expense only) was almost as great as the entire transportation expense involved in moving trains between terminals. Rail assemblage operations consist of classification, the expense of which was $4.71 per car (originated); transfer expense $3.14 per car; interchange track switching 55 cents per car; and industrial track (including house and team tracks) switching $3.07 per car. These operations lie at the heart of one of the industry's gravest problems - a problem which must be solved if permanent prosperity in the industry is to be had.

96. Classification. This is an operation which is practiced only by rail carriers. Its necessity arises out of the fact that many cars from many shippers to many destinations must be collected into and distributed from trains. The extent to which it is necessary is affected by the number of cars in the train (theoretically this variation is in permutation) and the number of sources or destinations, either tracks, yards, intermediate junctions or final terminals. The composite car in its average journey of 362 miles was classified over 7 times at an average cost (transportation only) of 62 cents each. The most effective means for reducing the cost is to reduce the necessity for the operation. Such reductions can be made in some degree by the following steps, the advisability of which will be discussed in later connections: (1) Motorization of terminal delivery operations through the use of containers; (2) reduction in the number of routes for intercarrier movements and the number of points where interchanges are made; (3) reduction in the length of carlot trains.

97. Transfers. Transfer operations which are also almost entirely confined to rail carriers consist of movement of cars from yard to yard within the same terminal and are made necessary by the multiplicity of yards. They are of two classes, single carrier where the movement is between yards of the same carrier,and multiple carrier (interchange) where the movement is between the yards of two carriers. Transportation cost alone of these operations was over 100 million dollars or 5 percent of total rail costs - nearly one third as great as road transportation cost. The composite car was transferred from one yard to another four times at an average cost of 68 cents each. Reduction in

transfer costs can be effected in whole or in part by (1) unification of terminals, (2) reduction in routes, and (3) short trains.

98. Industrial. The transportation cost of switching cars to and from initial or final tracks (house, team or industry) amounted in the case of railways to about 4 1/4 percent of the total rail cost, about 13 cents per ton or $3 per car. Lighterage, which in many cases is a parallel expense of water carlot carriers, amounted to slightly over 1 percent. Along the Atlantic Coast where it is generally more prevalent, it amounted to about 15 cents per ton. A substantial part of water traffic collection and delivery service is performed by rail lines.

99. Road Movement. The movement of freight between terminals required in transportation expense only 13 percent of rail revenue (17 1/2 percent of rail cost); 45 percent of water carlot carrier revenue; 78 percent of water cargo carrier revenue; and 8 percent of pipe line revenue. This movement cost is lowest in the case of pipe lines, 1/2 mill per net ton mile, and highest in the case of water carlot carriers, 2 1/2 mills. Water cargo carrier cost is 1 mill and rail cost 1 1/2 mills. The relatively low rail cost is due to the practice of aggregating and moving carlots in trains approaching cargo dimensions, an economy obtained in large part at the price of increased assemblage operations and costs.

XXVI TRANSPORT OVERHEAD

100. Overhead Costs. Overhead operations consist in: The performance of staff or central office functions of general direction, accounting, law, purchasing, and what accounting classifications often describe as sales promotion or traffic expense of pricing and selling, all of which are dealt with under the head of administration expense; the discharge of the tax obligation; and liability arising from loss and damage to freight.

In the case of rail carriers, overhead costs aggregate 15 percent of the revenue (19 percent of the costs); water carlot carriers 27 percent of revenue; water cargo carriers 18 percent; and pipe line carriers 12 percent. The cost per net ton originated is highest in the case of water carlot carriers - $1.45, and lowest in the case of water cargo carriers - 10 cents. With pipe line carriers it is 31 cents per ton and with rail carriers, 57 cents per ton. Per ton mile, however, due to the longer haul of the water lines, the rail cost is highest, 1.6 mills; water carlot carriers 1.5 mills; water cargo carriers .2 mill; and pipe line carriers .8 mill.

101. Taxes. The taxes laid upon railways are relatively much heavier than upon any other form of transport, constituting about 8 percent of their total revenue and 10 percent of their cost. With the pipe line carriers the ratio to revenue is about the same. With water carriers of all types it averages less than 1 percent. With highway carriers it varies from 2 to 4 percent, depending upon the length of haul. The costs per ton handled are rail carriers 30 cents, water carriers 5 cents, pipe carriers 19 cents, and highway carriers about 8 cents.

102. Administration. Rail costs of both phases of administration - general or executive expense, and sales expense - are much lower than for either type of water carrier, and with respect to administration expense are also lower than pipe line costs. The traffic ratios to revenue, respectively, were: Rail 2 percent; water carlot 11 percent; and water cargo 3 percent. Due doubtless to the fact that the great bulk of pipe line traffic is from affiliates, those carriers reported no sales expense. Upon a net ton basis the costs were: Rail 10 cents; water carlot carriers 62 cents; water cargo carriers not quite 2 cents.

Revenue ratios of general or executive expense were: Rail 4 1/2 percent; water carriers about 14 percent; and pipe line carriers 4 1/2 percent. This expense per net ton was: Rail 18 cents; water carlot carriers 78 cents; water cargo carriers 9 cents; and pipe line carriers 11 1/2 cents.

Rail administrative expenses, particularly those for sales promotion, are relatively so much lower than those of other carriers that the question arises whether they are not in fact inadequate in view of the present traffic situation.

103. Liability. Rail expenditures for loss and damage to freight aggregated slightly less than 15 million dollars in 1932.* This is equal to 6/10 of 1 percent of the rail revenues and not quite 3/4 of 1 percent of rail costs. Comparable expenses of other carriers could not be segregated.

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* These expenditures are included in income statements, section 4, but not on any of the cost analyses.

XXVII YARD AND TERMINAL OPERATIONS

104. Elements. The foregoing analyses of operations are from the function standpoint. To measure relative utility, however, as well as to develop unit costs for pricing purposes, it is necessary to consider the aggregate costs of all functions necessary to accomplish definite service objectives. Because of the individual characteristics which appertain to the several carriers, particularly the railways, it is convenient to make this distribution of operations in two steps, first a location one - between yard and road operations; and second a service one - between line and terminal operations.

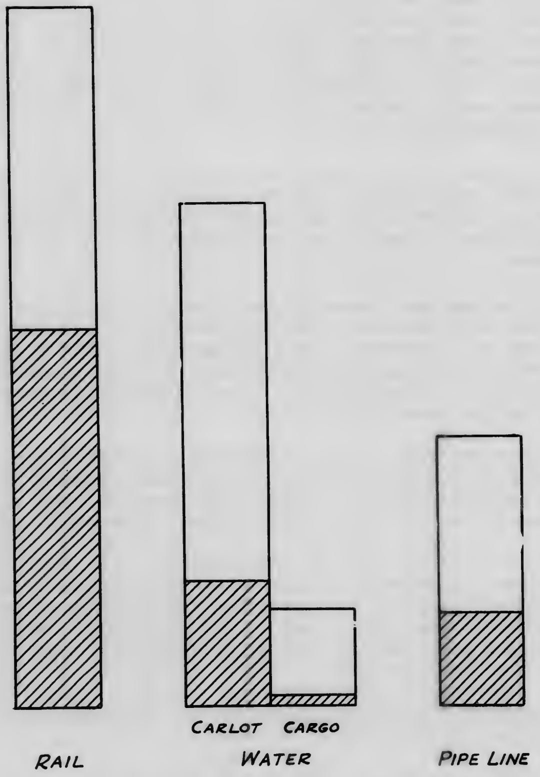
Yard operations, those which are conducted in terminal areas, were responsible for 54 percent of rail costs (all functions); 26 percent of water carlot carrier costs; 12 percent of water cargo carrier costs; and 29 percent of pipe line costs.

Yard operations are of two kinds: Terminal yardings, i.e., those incident to the origination and termination of the car which account for 70 percent of the total; and intermediate yardings, those incident to the handling of cars in yards other than origin and destination yards which account for the remainder.

Road operations, those located outside of the terminal areas, accounted for 46 percent of rail costs; 74 percent of water carlot carrier costs; 88 percent of water cargo carrier costs; and 71 percent of pipe line costs.

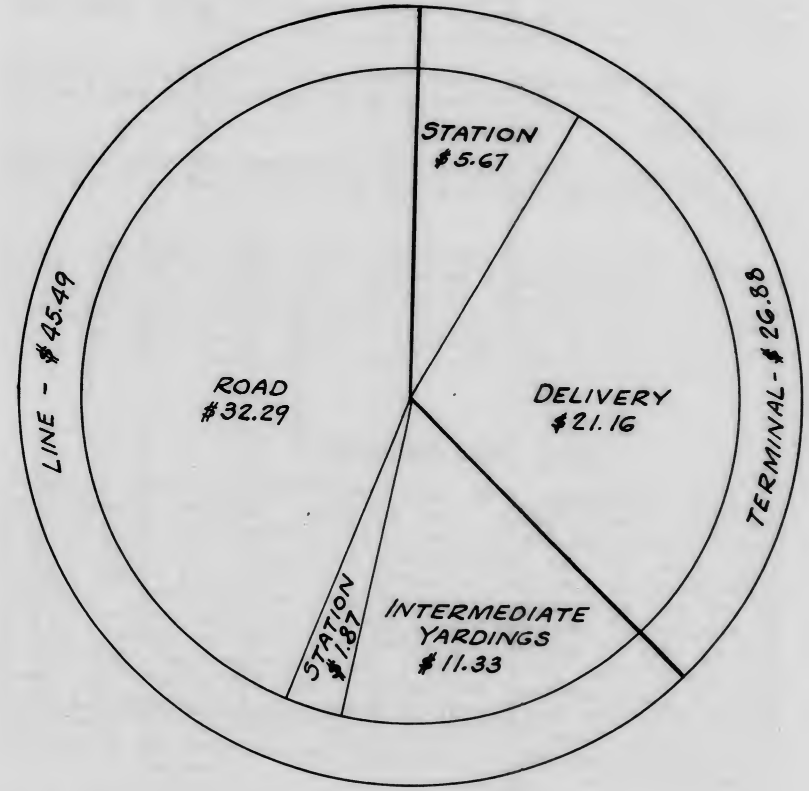
From a strictly service standpoint, all yard operations may be termed as subordinate activities preparatory to the main purpose, which is to move freight from consignor's door to consignee's door. The cost of performing this subordinate operation has so grown in importance in rail operations that it is the dominant expense. This is due to the practice of attaining relatively great economy in road operation at the expense of yard operation in order to assemble carlot traffic into cargo or tonnage train loads.

105. Utilization. The extent to which yards dominate rail service is in part reflected by their capacity. Exclusive of industry tracks, the rail yards of the country have capacity to chamber at one time over 3 1/4 times the entire number of carrier and non-carrier cars, and to house in roundhouses at one time nearly all the freight locomotives owned. In 1932 the total switch engine hours employed were 50 percent greater than the locomotive hours of road trains. The miles of track in yards were greater than those of branch lines and were half as great as the total route miles of main lines. On the average one car was received or delivered on



CARRIER LOCATION UNIT COST PER NET TON MILE

LEGEND
▨ YARD
☐ ROAD



RAIL SERVICE UNIT COST PER LOADED CAR

an industry track every second business day. It is quite evident that yard facilities today are substantially in excess of any likely need therefor.

106. Terminal Costs. Rail terminal (terminal yardings) costs aggregated 37 percent of rail costs; 26 percent of water carlot carrier costs; 11 percent of water cargo carrier costs; and 16 percent of pipe line costs.

The rail terminal (both terminals) cost $1.13 per ton and $26.84 per car of which $5.67 was station service and maintenance.

Comparable terminal costs of highway vehicles averaged about 50 cents per ton or about $12, less than half the rail cost.

One cause of the relatively high rail terminal costs lies in "reciprocally switched" or multiple carrier cars, that is, those switched to or from the origin or destination track by a switching carrier other than the road haul carrier in or out of the terminal. The average terminal cost of these cars is over twice that of the single carrier cars.

XXVIII LINE OPERATIONS

107. Elements. In line operations the basic transport service is performed - the movement between communities. These operations differ from "road operations" only in that they also include intermediate yardings. The cost of line operations as a whole, embracing all functions - maintenance of way and equipment, transportation and overhead - absorbed 63 percent of rail costs; 76 percent of water carlot carrier costs; over 91 percent of water cargo carrier costs; and 32 percent of pipe line costs. The average cost per net ton mile of line service on railways was 5.3 mills; on water carlot carriers 4.6 mills; on water cargo carriers 1.1 mills; and on pipe lines 2.1 mills. About 40 percent of total rail line expense was due to intermediate yardings and 60 percent to road expense

108. Utilization. In 1932 rail freight trains on the average moved in the same direction on a headway of about 11 hours or 176 miles. The trains were grouped into four classes for analysis - manifest, drag, main line way, and branch.* The composite manifest train consisted of 40 loaded cars, slightly over 750 net tons, and approximately 32 empty cars. Drag trains averaged 26 loaded cars, 794 net tons and approximately 27 empty cars.

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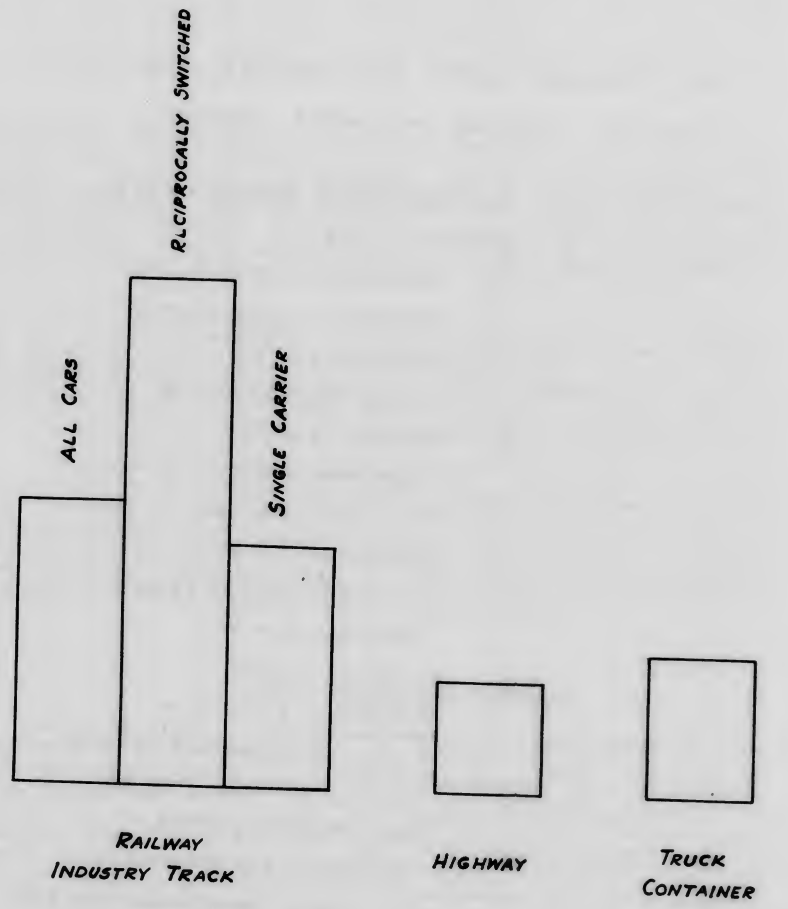
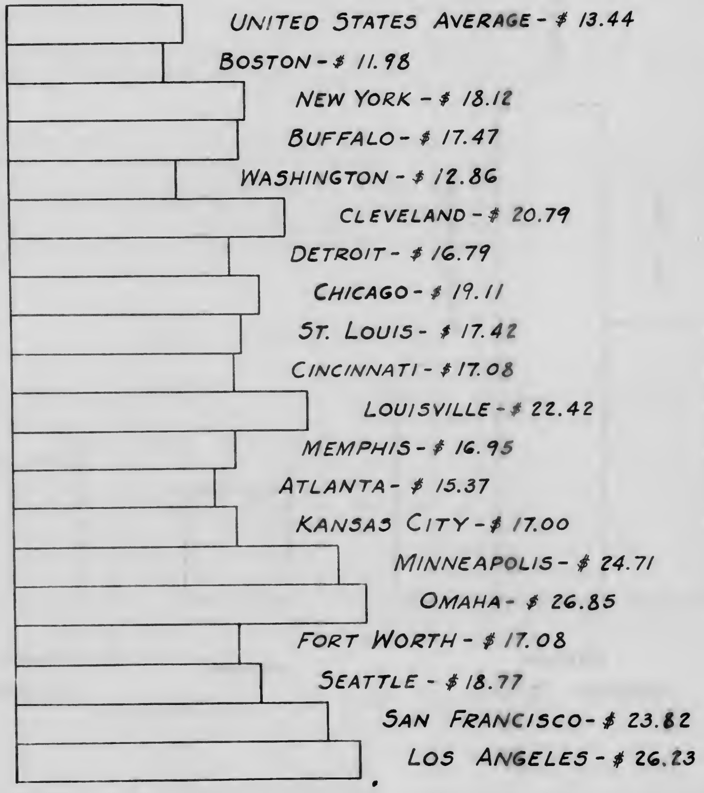
* Definitions in Glossary.



RAILWAY AND HIGHWAY TERMINAL COSTS PER LOADED CAR

RAIL TERMINAL COST PER LOADED CAR ON INDUSTRY TRACKS AT LARGE CITIES



109. Yardings. Intermediate yardings (single and multiple carrier) of cars en route in 1932 cost the rail carriers over 300 million dollars, and were about 16 percent of the total rail cost. On the average a freight car was given a yarding (terminal or intermediate) every 70 miles or 6 times in its average journey, there being over 100 million of such handlings in 1932, at an average cost of over $3 each.

110. Conveyance. The average cost of road train movement, embracing all functions, was $2.24 per train mile, 8.49 cents per loaded car mile, and 3.7 mills per net ton mile. This was equal to 45 percent of total freight cost. This composite cost per loaded car mile is made up of the following elements: Overhead 20 percent; roadway maintenance 21 percent; power maintenance 16 percent; car maintenance 3 percent, train movement 38 percent; station 2 percent.

111. Distribution. Distribution service of railways consists of the movement of carloads from and to way points, a service usually performed by way freight trains. This operation, which partakes largely of collection and delivery, handled about 14 percent of the revenue movement (in ton miles) but was responsible for 28 percent of the total cost.

In terms of revenue units handled, this was the most expensive rail service performed, costing over twice as much as through train service. Of the net tons originated by carriers, nearly one half were reported as handled in branch line way trains, and three fourths as handled in main line way trains, indicating that on the average all freight was handled at least once by a way freight train.

XXIX INTEGRATED MOVEMENT

112. Problem. The present costs of rail transport are influenced largely and in considerable degree inflated by the method of operation in which car units are aggregated and moved in train units with the definite objective of realizing the known economy of cargo loads. While this method does produce low cost road train movement and in cases does approach the economy of cargo movements, it not only imposes severe service handicaps due to terminal delays but also creates additional expense in terminals which go far toward offsetting the line economies.

The doctrine that a tonnage train is ipso facto an economical train has become so deeply imbedded in railroad philosophy that it is difficult to orient one's view sufficiently to reexamine, and perhaps modify, some of its implications.

The basic job which the railway undertakes is to move freight from one point to another. In its simplest aspects this would imply a single or unit movement, in which case the sales unit and the transportation unit would coincide. By means of a constantly increasing tractive potentiality in its power, it has been able to perform the line movement more cheaply by assembling an increasingly large number of such sales units into a single train or transportation unit. This practice, however, ceases to be economical at the point when the amount saved in line cost is less than the additional yard cost incurred in assembling cars in the train. The criterion is not the line cost of the operation, but the aggregate cost of line and terminal operations.

113. Instrument Utility. Present practices of rail and highway operators in handling freight(excluding merchandise) may be summarized as follows: The highway operator transports the truck load vehicle directly from door to door by a movement in which the terminal and line movements are completely integrated. The railway accomplishes the same result in two wholly distinct and separate operations - one embracing the collection and delivery of the car, its assemblage at origin, reassemblage at intermediate terminals, and disassemblage at destination into and out of long trains - and the other, the movement of these trains from origin to destination.

The rail unit cost of performing this service was more than twice the comparable cost of highway motor vehicle operations, if the intermediate yardings are included; and 60 percent greater, if they are excluded. The rail terminal cost (collection and delivery) could be reduced in many cases by the substitution of truck container operation for switching, particularly in the case of multiple carrier cars.

If these two instrumentalities continue to be operated competitively, the truck advantage in the terminal is overcome by rail superiority on the line at about 20 miles, which is indicated to be the economical trucking limit, omitting considerations of rates, service, convenience, etc. If, however, the two instrumentalities be coordinated, the trucking distance will be shortened but its volume increased, while the net reduction in costs, in the aggregate, would amount to nearly 13 percent of rail revenues.

Moreover, there is a relatively large field in which the potentialities of the rails as a cargo carrier may be realized, if the carlot traffic be separated from the cargo traffic and the latter handled in full train load lots (and at train load rates) without yarding at origin, destination or intermediate terminals, i.e., as a single shipment from consignor's track to consignee's track.

The data indicate that a full tonnage cargo train moving from a single origin track to a single destination track, without breaking the train line, would do so at a line cost of less than 2 mills per net ton mile, or below the average cost of pipe line transportation. This train also would eliminate much of the present terminal operations and expense. While the cost of this character of rail operation would continue to be higher than the cost of cargo water carriers, it would be lower than any form of land transportation. With respect to the traffic to which this type of transportation is adapted, the limitations of which are real, such cargo rail service offers great potential good for the commerce of our country, domestic and foreign, as well as for the carriers which provide it.

Again there appear to be possibilities, not only of improved service but economy of operation, by adapting the carlot transportation unit more closely to the sales unit, particularly in distribution service.

The data gathered in the survey of light rail power indicate that the manufacturers now offer a type of light train of several cars, claimed to be capable of providing transportation of carlot freight at express train speeds, which practically eliminates terminal delays and which could be operated at a cost, including wages, no greater than the cost of operating conventional trains.

The foregoing is written with full appreciation of the impossibility of substituting such trains for conventional trains upon a wholesale basis. Since, however, the way freight trains, main and branch, are clearly the most costly of the trains operated by railways, experiments to test the claims of the manufacturers, at least on a few branch lines might well be considered. If such tests should demonstrate that the short rather than the long train is the most economical unit for carlot work, it would prove of immense public benefit because, from a service standpoint, it would prove far superior to present trains.

XXX INTERCARRIER OPERATIONS

114. Necessity. Intercarrier operations have become necessary because commerce, having lost its provincial aspects, now extends far beyond the lines of a single carrier. These operations have assumed a dominant place in American transportation, particularly in the case of water and rail carlot carriers. The method based on assemblage of carlots into trains requires that these trains be primarily operated as a local movement of the individual carriers. Only in relatively few cases are they operated directly or indirectly as through movements.

115. Routing. The privilege of specifying the carrier's intermediate, as well as initial and final junction points at which the interchange shall be made, is conferred on the shipper by an act of Congress. Under present conditions its benefits are twofold: (1) It protects the small or intermediate carrier in the strife for traffic against its larger and more strongly intrenched competitors; and (2) it places a weapon in the hands of the shipper by which he can enforce good service.

The policy of wide open carrier routes, however, has developed evils which outweigh these conceded benefits: (1) The weapon in the shipper's hands can be, and increasingly in the past few years has been, used as a club by which to compel carriers to grant rate reductions or adjustments, instead of submitting such demands to the Commission; (2) the practice leads to prolixity and complexity in tariffs to avoid indefiniteness; (3) the policy encourages circuitous routing; (4) the policy has greatly increased the necessity, intensity and expense of off line solicitation; (5) the policy leads to wasteful methods of operation by increasing the number of points at which interchanges are made, by greatly increasing the number of interchanges themselves, and by discouraging through intercarrier train operations.

116. Cost. In 1932 there were over 50 million interchanges reported at an aggregate cost of 330 million dollars. The cost per car interchange was $10.78 and per intercarrier car originated $30.85.

117. Minimization. At all places where joint or unified yards are possible the cost of line interchanges can be reduced to that of an intermediate carrier yarding, which is about one third the present average cost of an interchange. With respect to terminal interchanges, the road-haul carrier can perform the service more economically by truck, particularly if containers are employed. The benefits of wide open routing to the shipper also are illusory. The service by direct competitive routes generally will be far superior to

that available by circuitous routes. Competition in service would be no less effective if, for a given movement, there were only three or four direct routes open instead of many thousand routes. With direct routes available, grouped into definite channels, the shipper's interests will be advanced by great acceleration in overall speed which results from the movement in through intercarrier trains, and also by the elimination of waste in operating expenses which in the end are borne by the shipper.

COORDINATION

XXXI OBJECTIVES

118. Commerce. Commerce is the one trait of man's civilization without which nations quickly disintegrate and their citizenship reverts to barbarism. A transport system is a first requisite of commerce. For this reason, it is generally recognized that the primary purpose of transportation is public service, though to be successful as a private enterprise it must be profitable.

The exploitation of commerce facilities is a public and not a private franchise, however desirable it may be that this franchise be privately exercised. There can be no private or vested right to such a public franchise, or to the advantage of location or the traffic accruing therefrom. Under no other conditions can private operation permanently continue.

119. Service. To develop trade, transport must point its service to meet every demand of traders, must adjust its prices to encourage the largest possible movement of goods profitably, and must encourage the establishment and development of markets. To this end the public has the right to expect that the operators of its transport will lead and not follow progress, and will be alert to adopt every possible improvement in facilities and services which man's genius may make possible.

The carrier's obligation goes further than operating its transportation facility. It must be prepared to employ that facility, in conjunction with other transport facilities, even in cases to the subordination of its own private gain to the public good.

This, however, by no means implies socialization. Quite the contrary is true. No private enterprise can function efficiently or serviceably except at a profit. Neither the owners nor the employees will contribute capital and labor essential to its continuance unless both are adequately compensated, and their respective positions made reasonably stable and secure. No greater disservice can be done the nation than to perpetuate a system of impoverished and pauperized transportation.

120. Economy. The carrier owes the obligation to employ every possible means to make its operations economical as well as efficient and serviceable. This duty extends not merely to the employment of modern and efficient instruments in its own operations, but also to its utilization of the facilities of others, or to the utilization by others of its facilities whenever the efficiency of the industry and thereby the national commerce are promoted.

XXXII COMPETITION

121. Nature. Unlike some other public services, such as for illustration the telephone, there is no inherent necessity that transport monopoly be created. On the other hand, the fact that it is a public service places definite limits upon the extent to which competition should be permitted from the public standpoint.

The line of demarcation which, from the public standpoint, separates evil and good competition needs to be reconsidered and defined.

122. Evil. Competition is evil whenever, from the standpoint of the industry as a whole, it results in transportation waste, undue preference or instability. Measured by this criterion, the common varieties of vicious competition are: Competition between two different forms of transportation; market competition; price competition; and plant competition.

The purpose of transportation being to promote national commerce, the form of agency by which it is performed is of importance only to the extent that that agency be the agency, or combination of agencies, which will perform the task with the greatest celerity and economy. Competition between different types leads inevitably to the attempt by each agency to perform service for which its instrumentalities are inferior to those of a competiting agency, thereby impairing service and burdening commerce. This evil is inherent in this type of competition. Only by integrating transportation in carrier agencies, which utilize the facilities of all types of transportation, can a reasonably efficient and serviceable system be evolved.

Competition between markets, both of production and consumption, is intense and incessant. It leads carriers to overlook the fact that their duty is to the nation and not to the community, and is subversive of our domestic policy of free channels of commerce with the opportunity to use them open to all, upon equal terms. When, however, a carrier's operations are restricted to a region or to a particular market or group of markets to which as a private enterprise it must look for its sustenance, it is quite natural for it to seek to promote the business of that market or markets at the expense of those which it does not serve.

In ordinary business affairs competition in price is the chief protection which the public has against extortion. This condition, however, does not apply to transportation. From early times the public has asserted the right to protect itself against unreasonable charges. At the present time, at least insofar as the chief form of domestic transport is concerned, the control over charges is plenary. Not only is there no need for price competition, but it leads to serious public evils. An obligation of the carrier, as important as that to charge reasonable rates, is that to charge non-preferential ones. In practically all, if not all, cases of competitive price making, the purpose is to get a definite business, sometimes of a single shipper or a small group, and in many such cases the result, if not the intent of the practice, is to prefer such a shipper or group of shippers. A second evil of competitive price making lies in the fact that since eventually price parity will be reestablished, but upon a lower level, carrier revenues are wastefully depleted.

Competitive duplication of plant and service is an evil in both its positive and negative consequences. The positive evil is the burden which the excessive plant or service casts upon transportation. The negative evil is the tendency by agreement to forego improvements in plant or service, because of the expense which others would incur to duplicate such improvements.

123. Good. Competition, however, when kept within reasonable bounds, is inherently beneficial. Nothing else will keep an organization on its toes so effectively. The fact that the service must be sold, not merely delivered, tends constantly to make competitive carriers seek better or more efficient means or instrumentalities for performing service, or to install new services to create or develop traffic rather than to filch it from one another. So long as private profit remains the incentive for carrier service, competition in service, restrained within reasonable limitations, must also remain if the service is to be kept efficient and economical.

XXXIII MANAGEMENT

124. Necessity. Beginning as local carriers serving limited and localized areas, railways increased in number until there were a thousand or more independent lines. With the growth and development of the country, joint traffic over these lines gradually increased in importance. Coincidently, as the effect of this development, integration of carriers proceeded rapidly until arrested by the policy of enforced competition which, until recent years, actuated public regulation of transportation. With the coalescence of commerce continuing unabated until sectionalism in trade is fast disappearing, joint carrier traffic has assumed an overwhelming predominance in transportation. The present threatened breakdown during a period of subnormal traffic is traceable to the same fundamental causes of a similar breakdown in 1917 during a period of abnormal traffic. This cause is incoherence in the discharge of joint or common functions.

125. Joint Functions. Each of the hundred major railway systems, not to mention other types of carriers, handles joint traffic in much the same way as it handles local traffic, despite the fact that the latter traffic constitutes less than a fourth of the total. There are many functions, however, which require the mutual or cooperative action of two or more carriers, such as joint rates, tariffs, through service and routing. There are other functions the exercise of which by a single carrier will directly affect other carriers or the industry as a whole, or the success of which inherently requires cooperation, such as marketing and research. The existence of the unitary nature of these functions demands recognition, and the creation of an integrated agency to discharge them.

126. Pricing. Some degree of integration of pricing functions has come about through the coalescence of commerce and by reason of public control over joint rates and routes. The continued assertion of the "right of individual action" so zealously guarded by the carriers, tends to prevent real cooperation. Pricing of transportation is too vital to the nation's welfare to be left to a hundred or more uncoordinated agencies frequently working at cross purposes. Ratemaking can never become the simple, accurate process which it should be until it rests in the hands of a single carrier agency, just as the power to regulate rates for practical purposes now rests in a single governmental agency.

127. Service. From the facts developed in the survey, it is quite apparent that there is real opportunity for rail managements to achieve economies by reducing the cost of intercarrier routing and interchange.

For some years it has been the policy of carriers to accept and solicit traffic by any route over which they can get it. Routing disputes in carrier rate checks frequently absorb as much time, and considerably more feeling, than the rates themselves. The theory underlying this policy is that a little bit here, there and yonder is better than a big bit in one piece. The evil of the situation can be illustrated by the conditions which exist in Chicago. Omitting Canadian lines, there are 11 predominantly Eastern Carriers and 9 predominantly Western Carriers. Each of these 20 major lines interchanges cars as parts of intercarrier movements with the other 19. Analysis of their 1932 interchanges at Chicago indicates that with little or no change in the amount of business handled by each, the 20 carriers can be grouped into 4 through routes for intercarrier traffic, each of which could function as a single line with respect to solicitation, service, accounting and interline settlements. This process could be carried out at the ten major gateways through which over half of the interterritorial traffic moved in 1932. At the same time a national policy of closing all circuitous routes via interior junctions except for strictly local traffic should be pursued.

A plan such as this does not menace other carriers or service, since routes could not be closed in this manner without the tacit approval, at least, of the Commission. Such a plan of through routing would quickly be followed by operating arrangements, which would greatly reduce, if not eliminate, the present enormous cost of interchange.

The amount of waste, due to multiplication of train service, is liable to be overstated. The train density of railways is comparatively light over practically the entire country. The opportunity for statesmanship in the industry lies not so much in reducing train schedules, as it does in securing a much more frequent service with the present amount of train service. Track utilization in 1932 was not heavy enough to warrant the conclusion that any substantial amount could be eliminated by consolidation of trains over so called trunk lines, since the service on few lines was more than would be required to take care of local needs alone. There is an opportunity, however, greatly to improve service through cooperation.

128. Marketing. The facts developed in the surveys indicate that for some years to come carriers must look to the development of their present markets, rather than to the exploitation of new. Adjustment of service to accomplish this development requires thorough investigation of all sources of production and all outlets of consumption. This task is wholly beyond the power of any one carrier, or indeed of any single type of carriers. It is one which can only be accomplished by the heartiest degree of mutual cooperation of all types of carriers.

129. Independence. The integration of these common functions of management in the manner suggested involves no surrender of corporate independence or identity. Achieving most of the benefits of consolidation or pooling without incurring their danger, the program suggested leaves unimpaired all other carrier functions of operation and management. The risk of a loss in a carrier proportion of the traffic is one involved in every sort of integration, whether it be consolidation, pooling or traffic agreement.

Since origin and terminal lines, however, receive 2/3 of the total intercarrier revenues the risk of any adverse results from changes of this sort is exaggerated. Free terminals in which all lines are available to all shippers through motorization are inevitable. When that day is reached much of the so called "strategic value" of such locations will disappear and all carriers, as well as all shippers, put upon a level basis of opportunity. Furthermore, the claim that a carrier is responsible for the freight which it delivers another no longer holds true. All it does is to deliver in accordance with the routing, for much of which the solicitation or location of the receiving line is responsible. The situation of the intermediate carrier, particularly the smaller lines, admittedly would be somewhat precarious. Gradually the few carriers, whose traffic is predominately of this character, are being absorbed by terminal lines - a process, which for many reasons of public policy, should be encouraged. So long as this type of carriers continues, however, it is essential that care be taken to protect their interest not only by their managements but by reviewing authority

XXXIV AGENCIES

130. Agency Coordination. Not the least vicious of the effects of competition of different forms of transport is the encouragement of each to perform services for which its utility is inferior to that of another agency. Generally speaking, from a service standpoint alone, the motor truck is superior to the railway, due to the time which the latter consumes in yards and in assemblage. For distances within 25 miles, and possibly within as much as 75 miles, this superiority is inherent. Certainly beyond 100 miles, however, the railway has the potential superiority to render the faster service. From a cost standpoint the truck is superior to the railway in terminal operation, but the railway to the truck in line operation. Where service and not cost is paramount, the railway, with short train units, can render a much faster and cheaper long distance service. Both the truck and the train are essential to modern transportation. Neither should be permitted to oust the other from the field.

Since depreciation of an investment already made looms so large a factor in pipe line costs, present pipe trunk lines can furnish land transportation for crude petroleum more economically than parallel movements can be furnished by rail. Arrangements for the handling of crude petroleum in cargo lots by railroads should be made in the case of all new fields and new construction of pipe lines avoided. Similarly, gasoline can be handled in full cargo lots more economically and expeditiously by rail than by pipe line. Crude petroleum can be collected by gathering pipe lines much more economically than by any other means. Complete coordination of the two agencies is possible and desirable. A first step in that direction would be rail-pipe joint cargo rates.

Coordination of rail and water and pipe and water facilities can also be resolved by distinct rules. Formerly the railway performed a much greater terminal service than the water carrier. With motorization of terminal they are now placed upon exact equality, hence the relative utility of the two forms of transportation should be gauged by the cost of the line service, including, in the case of rails, intermediate yardings. Water carrier service is of two distinct classes - common carrier service where the sales unit roughly is equivalent to the rail carload unit, and contract (including private operations) where the sales unit approximates a cargo. Examination reveals that the line costs of the carlot (common carrier) water operations in a number of cases, including the Federal Barge Line operations, are as high as the rail line costs. On the other hand, the line costs of the cargo operators in practically every case are considerably below either the present rail line costs or those potential in cargo train operation.

Coordination and stability can be achieved by making the rates of both carlot and cargo shipments (separately) by water or rail, or joint rail and water carriers under a uniform classification in accordance with their respective costs. This will mean that the traffic will move by rail or water, or rail and water, depending on whether the service by rail is sufficiently better to warrant the higher rates. The rail and water cargo rates should be based on the relative service performed by each agency. Rates fixed on any theoretical evaluation of the worth to the shipper of the difference in time are nothing less than an arbitrary distribution of the traffic. The public is entitled to rates measured by the actual cost of performing the service by the two agencies, permitting it to appraise the relative worth of the service at those prices.

Precisely the same method of coordination should be followed in the case of water and pipe lines.

The foregoing suggestions envisage a complete system of transportation with rates based upon the cost of providing it by each agency. Cutthroat practices of handling some traffic as a by-product and hence at the expense of other traffic would in time disappear. Only by such a system of ratemaking can order and stability be brought out of the present disorder.

XXXV OPERATIONS

131. **Field**. The principle that carrier property is devoted to the public service is nowhere of more importance than in the consideration of the joint use of facilities. The obligation rests upon the managers of the industry to minimize to the greatest possible degree the effect of the present surplus of transport facilities. All facilities of all types of carriers should be made available to all other carriers, to the end that the most serviceable and economical utilization thereof will be made. This applies to line operations, terminals and equipment.

132. **Line**. In view of the amount of overproduction present in today's transport facilities, there rarely is justification for the construction of new freight facilities except to regions now without service. Whenever for any reason a new line penetrating a territory already served is necessary its construction, as far as practicable, should be avoided by trackage rights. In such cases, as well as in some cases of present contracts, the net cost to the industry (as distinct from one or the other of the parties involved) can be avoided through the operation of joint trains. Rail branch lines constitute about one third of the rail mileage. In many cases the chief and in some the only function of these branch lines is to tap an important market on a competing railroad. In view of the high costs of operating these lines, consideration should be given to the abandonment of such branches in the interest of the industry and the public service.

133. **Terminals**. Over half the costs and two thirds of the time of carriers are spent in the terminal. These costs are due in part to the necessity for transfer - and the resultant classification - arising from the lack of yard unification. Accompanying the policy of carrier through routes already discussed, there should be an effort to unify yard operations insofar as intercarrier traffic is concerned, so that this traffic can be handled in what to all intents and purposes are through trains, thereby not only greatly speeding a present sluggish service, but also achieving major economies. The entire question is one now being handled by the Director of Regional Coordination.

134. Equipment. The question of the ownership, operation and pooling of equipment is one which has been handled by the Section of Car Pooling and, therefore, not considered in this report. As has been made evident in earlier parts, however, an essential to transportation is container equipment interchangeable between rail, highway and water carriers, domestic and foreign. The success of this type of operation in large measure will be dependent upon the degree to which it is made universally interchangeable.

XXXVI EFFECT

135. Owners. Under the proposals hereof the interests of the owner should advance. The present conditions have brought about such instability of investment, much less the return, that millions of dollars invested in rail securities by the public, insurance companies, banks, and trusts are endangered.

To provide stability in carrier securities, it must be provided for the industry. That will not be accomplished by the continuance of warfare in which the carriers are constantly seeking an ephemeral advantage or the protection of an illusory vested right. No single carrier is likely to prosper if the industry collapses, and on the other hand, not many are liable to suffer, if it be prosperous. The question of stability of investment rests largely upon the degree to which the representatives of the owners mutually cooperate.

136. Employees. No class of persons has felt the effect of the breakdown of the industry more seriously than has its labor. In 1920 over 10 percent of the population of the nation depended directly or indirectly upon railway employment. Today it has shrunk to less than half that amount. The reduction in total yearly earnings, particularly among the unskilled employees, has been relatively higher than in many other industries. Due to constant progress in the art and to new transport facilities and instrumentalities which science continues to produce, it is quite possible that much of the personnel in the industry must be reassigned permanently. In many of the suggestions designed to effect economy, made herein, the employees, if not protected by appropriate provision, would initially bear the brunt. Adequate steps to avoid that end should be taken.

Much more important to labor, however, is that stability and security of transportation employment be reestablished and maintained. No real or lasting benefit can be attained by the industry which will not be reflected immediately in improvement of labor conditions. On the other hand, no law or rule, however stringent, will permanently protect against the inevitable collapse of an unprofitable industry. The greatest opportunity for employees, both in the quantum and stability of their employment, lies in the rehabilitation of the industry itself. When the industry is prostrate, its employees naturally will suffer. When the industry is prosperous, its employees inevitably must prosper.

Volume 2

LIBRARY
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FEDERAL COORDINATOR OF TRANSPORTATION

FREIGHT TRAFFIC REPORT

FACTUAL SUMMARY OF UNDERLYING DATA

VOLUME II

Section of Transportation Service

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EXPLANATORY NOTE

The Factual Summary comprises eight summaries, each dealing with one of the underlying surveys, namely, The Carload Shipper Survey, which is referred to for brevity as The Shipper Survey or simply as Shipper; The Railway Carload Traffic Survey, called Railway; The Railway Light Motive Power Survey, called Power; The Transportation Vehicle Survey, or Vehicle; The Freight Station Survey, or Station; The Waterway Traffic Survey, or Waterway; The Petroleum Traffic Survey, or Petroleum; and The Highway Operation Survey, or Highway.

These summaries were written in accordance with a single master outline, the same sectional numeration being used in each as was used in the Freight Traffic Report proper (Volume I). After being written, the several summaries were consolidated under this outline in the manner presented herein.

If desired, each summary may be read as it was written originally, by following the Topical Cross Reference Index, which lists the page of each section of each individual summary consecutively.

To avoid repetition and to maintain consistency, as far as possible certain words and phrases were used in a special, restricted or technical sense in The Report, The Factual Summary and The Statistical Analyses. A Glossary of the words and phrases so used is included herein.

TOPICAL CROSS REFERENCE INDEX

		VOLUME I	VOLUME II								
		Page of The Report	Page of Factual Summary								
			General	Shipper	Railway	Power	Vehicle	Station	Waterway	Petroleum	Highway
	THE TRAFFIC										
I	**THE UNDERLYING SURVEYS**										
1	Description	15	31	32	32	33	33	34	34	34	35
2	Objective	15	-	36	36	36	36	37	37	37	37
3	Typicality	16	38	38	39	-	-	40	41	41	-
II	**PROFITABILITY OF FREIGHT SERVICE**										
4	Income	16	-	-	-	-	-	-	42	42	-
5	Causes	16	-	-	-	-	-	-	43	-	-
III	**FREIGHT VOLUME**										
6	Aggregate Volume	18	44	46	-	-	-	-	-	47	-
7	Carrier Distribution	18	48	49	50	-	-	-	51	53	-
IV	**FREIGHT TRAFFIC MARKETS**										
8	Territorial Markets	18	-	-	54	-	-	-	54	55	-
9	Terminal District Markets	19	-	-	56	-	-	-	57	58	-
10	Trade Area Markets	19	-	-	59	-	-	-	-	-	-
V	**FREIGHT COMMERCE**										
11	Factors of Commerce	19	-	-	60	-	-	-	-	-	-
12	Local Commerce	19	-	-	60	-	-	-	60	-	-
13	Intercarrier Commerce	21	-	-	61	-	-	-	61	-	-
14	Intraterritorial Commerce	21	-	-	61	-	-	-	62	-	-
15	Interterritorial Commerce	21	-	-	63	-	-	-	64	64	-
16	National Commerce	21	66	-	66	-	-	-	-	-	-

TOPICAL CROSS REFERENCE INDEX

THE SERVICE

		VOLUME I	VOLUME II								
		Page of The Report	Page of Factual Summary								
			General	Shipper	Railway	Power	Vehicle	Station	Waterway	Petroleum	Highway
VI	ELEMENTS OF TRANSPORTATION SERVICE										
17	Definition	-	-	68	-	-	-	-	-	68	-
VII	TRANSPORTATION SPEED										
18	Basis	23	68	68	-	-	-	-	69	-	-
19	Determinative Factors	23	-	-	-	-	-	-	69	69	-
20	Present Speeds	23	-	70	71	-	-	-	72	-	-
21	Potential Speed	24	-	-	73	-	-	-	-	-	-
22	Effect of Speedy Service	24	-	74	-	-	-	-	-	-	-
VIII	COMPLETENESS OF TRANSPORTATION SERVICE										
23	Nature and Basis	24	-	-	-	-	-	-	-	-	-
24	Present Service	24	-	74	75	-	-	-	76	76	-
25	Potential Service	25	78	-	-	-	-	-	-	-	-
26	Effect of Complete Service	25	-	78	-	-	-	-	-	-	-
IX	SCHEDULE CORRELATION										
27	Demand	25	-	-	-	-	-	-	-	-	-
28	Present Schedules	26	79	-	80	-	-	-	-	-	-
29	Potential Service	26	-	-	-	-	-	-	-	-	-
30	Effect of Correlation	26	-	80	-	-	-	-	-	-	-
X	ADAPTNESS										
31	Nature and Demand	26	-	-	-	-	-	-	-	-	-
32	Present Adaptness	27	-	81	-	-	-	-	-	82	-
33	Potential Adaptness	27	-	-	-	-	-	-	-	-	-
34	Effect of Adaptness	27	-	83	-	-	-	-	-	-	-

TOPICAL CROSS REFERENCE INDEX

THE CHARGES

		VOLUME I	VOLUME II								
		Page of The Report	Page of Factual Summary								
			General	Shipper	Railway	Power	Vehicle	Station	Waterway	Petroleum	Highway
XI	ELEMENTS OF FREIGHT CHARGES										
35	Determinative Factors	29	-	84	-	-	-	-	-	-	-
36	Reorganization	29	-	-	-	-	-	-	-	-	-
XII	FREIGHT TRAFFIC SALES UNIT										
37	Requirements	30	84	-	-	-	-	-	-	-	-
38	Present Sales Unit	30	85	85	87	-	-	-	88	89	-
39	Modern Sales Unit	31	90	-	-	-	-	-	-	-	-
40	Effect of Modern Unit	31	93	-	-	-	-	-	-	-	-
XIII	FREIGHT COMMODITY CLASSIFICATION										
41	Purpose	31	-	-	94	-	-	-	-	-	-
42	Load	32	-	-	-	-	-	-	-	-	-
43	Risk	32	-	-	95	-	-	-	95	-	-
44	Special Service	33	-	-	-	-	-	-	-	-	-
45	Present Classification	33	-	95	96	-	-	-	-	-	-
46	Suggested Classification	33	99	-	-	-	-	-	-	-	-
XIV	PRICE LEVEL										
47	Definition	34	-	-	-	-	-	-	-	-	-
48	Carrier Level	37	-	-	-	-	-	-	-	-	-
49	Commodity Level	37	-	101	102	102	-	-	-	103	-
50	Effect	39	-	105	-	-	-	-	-	-	-
51	Modern Level	40	-	-	105	-	-	-	-	-	-
XV	PRICE STRUCTURE										
52	Definition	68	-	-	-	-	-	-	-	-	-
53	Carrier Structures	68	-	-	106	-	-	-	-	-	-
54	Commodity Structures	69	-	-	-	-	-	-	-	-	-
55	Effect	69	106	-	-	-	-	-	-	-	-
56	Modernization	70	106	-	-	-	-	-	-	-	-
XVI	TARIFFS										
57	Purpose	71	-	-	-	-	-	-	-	-	-
58	Present Tariffs	71	-	-	-	-	-	-	108	109	111
59	Defects	71	-	-	-	-	-	-	-	-	-
60	Modernization	2	-	-	-	-	-	-	-	-	-

TOPICAL CROSS REFERENCE INDEX

		VOLUME I					VOLUME II				
		Page of The Report	Page of Factual Summary								
			General	Shipper	Railway	Power	Vehicle	Station	Waterway	Petroleum	Highway
	THE OPERATIONS										
XVII	STATISTICAL ANALYSES										
61	Necessity	73	112	-	-	-	-	-	-	-	-
62	Factors of Utility	73	-	-	-	-	-	-	-	-	-
63	Criteria	74	-	-	-	-	-	-	-	-	-
64	Present Accounting	74	-	-	113	-	-	-	-	-	-
65	Present Statistics	74	-	-	114	-	-	-	-	-	-
66	Modernization	75	114	-	-	-	-	-	-	-	-
XVIII	CARRIER INQUIRIES										
67	Statistics Used	76	-	-	115	-	-	-	116	-	117
68	Unit Costs	76	-	-	117	-	-	-	120	-	121
69	Statistical Procedure	77	-	-	-	-	-	-	122	-	124
XIX	NATURE OF OPERATIONS										
70	Extent	77		-	131	-	-	-	132	134	-
XX	CIRCUITY OF MOVEMENT										
71	Directness	77	-	-	135	-	-	-	135	-	-
XXI	OVERALL COSTS										
72	Investment	78	-	-	136	-	-	-	-	137	137
73	Servicing	78	-	-	138	-	-	-	138	139	139
74	Functions	79	-	-	-	-	-	-	-	-	-
75	Function Costs	79	-	-	140	-	-	-	140	142	143
XXII	CARRIER FIXED PLANT										
76	Necessity	79	-	-	-	-		-	-	-	-
77	Maintenance	82	-	-	152	-	-	-	153	154	-
XXIII	TRANSPORT POWER										
78	The Problem	82	-	-	-	-	-	-	-	-	-
79	Present Capacity	82	-	-	154	-	-	-	155	-	-
80	Maintenance	83	-	-	156	-	-	-	-	157	-
81	Modernization	83	-	-	-	157	-	-	-	-	-
XXIV	TRANSPORT VEHICLES										
82	Present Vehicles	85	-	-	177	-	-	-	-	-	-
83	Containers	85	-	-	-	-	187	-	-	-	-
84	Weight	85	-	-	231	-	-	-	-	-	232
85	Versatility	85	-	-	233	-	-	-	-	-	-
86	Adaptness	86	-	-	236	-	-	-	-	-	-
87	Dependability	86	-	-	-	-	-	-	-	-	-
88	Accessibility	86	-	237	237	-	-	-	-	-	-
89	Mobility	87	-	238	238	-	-	-	-	-	-
90	Utility	87	-	-	-	-	-	-	-	-	238
91	Capacity	87	-	-	239	-	-	-	-	-	-
92	Modernization	89	-	-	240	-	-	-	241	-	242

TOPICAL CROSS REFERENCE INDEX

		VOLUME I					VOLUME II				
		Page of The Report	Page of Factual Summary								
			General	Shipper	Railway	Power	Vehicle	Station	Waterway	Petroleum	Highway
	THE OPERATIONS (Continued)										
XXV	CONDUCTING TRANSPORTATION										
93	Nature	90	-	-	244	-	-	-	-	-	-
94	Agency	90	-	-	-	-	-	244	-	262	-
95	Assemblage	92	-	-	262	-	-	-	262	264	-
96	Classification	92	-	-	264	-	-	-	-	-	-
97	Transfers	92	-	-	266	-	-	-	-	-	-
98	Industrial	93	-	-	266	-	-	-	266	-	-
99	Road Movement	93	-	-	267	-	-	-	267	267	-
XXVI	TRANSPORT OVERHEAD										
100	Overhead Costs	93	-	-	268	-	-	-	-	268	-
101	Taxes	94	-	-	269	-	-	-	269	269	270
102	Administration	94	-	-	272	-	-	-	272	274	274
103	Insurance	94	-	-	-	-	-	-	275	-	-
XXVII	YARD AND TERMINAL OPERATIONS										
104	Elements	95	-	-	277	-	-	-	-	-	-
105	Utilization	95	-	-	278	-	-	-	-	-	279
106	Terminal Costs	98	-	-	281	-	-	-	282	284	284
XXVIII	LINE OPERATIONS										
107	Elements	98	-	-	289	-	-	-	-	289	-
108	Utilization	98	-	-	289	-	-	-	-	-	-
109	Yardings	101	-	-	290	-	-	-	-	-	-
110	Conveyance	101	-	-	291	-	-	-	293		-
111	Distribution	101	-	-	294	-	-	-	-	-	-
XXIX	INTEGRATED MOVEMENT										
112	Problem	101	-	-	-	-	-	-	-	-	-
113	Instrument Utility	102	-	-	296	-	-	-	-	-	297
XXX	INTERCARRIER OPERATIONS										
114	Necessity	104	-	-	-	-	-	-	-	-	-
115	Routing	104	-	-	-	-	-	-	-	-	-
116	Cost	104	-	299	300	-	-	-	-	-	-
117	Minimization	104	-	-	-	-	-	-	-	-	-

TOPICAL CROSS REFERENCE INDEX

VOLUME I

Page of The Report

COORDINATION

XXXI OBJECTIVES

118 Commerce 106
119 Service 106
120 Economy 107

XXXII COMPETITION

121 Nature 107
122 Evil 107
123 Good 108

XXXIII MANAGEMENT

124 Necessity 109
125 Joint Functions 109
126 Pricing 109
127 Service 109
128 Marketing 110
129 Independence 111

XXXIV AGENCIES

130 Agency Coordination 111

XXXV OPERATIONS

131 Field 113
132 Line 113
133 Terminals 113
134 Equipment 114

XXXVI EFFECT

135 Owners 114
136 Employees 114

GLOSSARY

Absorption of Charges on Freight: Assumption by the carrier of payments incurred for special services or privileges which are deducted from its freight revenue, such as bridge and ferry arbitraries, switching, lighterage and wharfage.

Accessories: Commodity classes embracing completely processed materials convenient and desirable but not indispensable to life, including metals, metal articles, rubber, leather, machinery, tools, vehicles, explosives, stationery, printing, personal sundries and similar articles.

Accounting Division: The primary units into which the system or the railways comprising it are subdivided for the keeping of accounts or statistics of operation separately by primary accounts or by items or subdivisions of primary accounts.

Acquire - **Acquisition**: To procure or the procurement of facilities or right to occupy or use same, by any means.

Additions: Additional facilities, such as additional equipment, tracks, buildings, bridges and other structures; additions to such facilities, such as extensions to tracks, buildings and other structures; additional ties in existing tracks; and additional devices applied to facilities, such as air brakes applied to cars not previously thus equipped.

Administration: Direction, supervision and control of business and personnel including traffic and general expense.

Advertising: When used in statistical analyses, expense of advertising and with respect to railways expense chargeable to primary account 353.

Agency: When used with respect to transportation expense, the operation of a station for the receipt and delivery of freight traffic, excluding maintenance.

Agency Cars: That proportion of the cars reported by a carrier freight agency or group of freight agencies as handled by such carrier or carriers and influenced in part by the solicitation of such agency or group of agencies, which the total cars handled by carriers in the rate territory, in which such agency or agencies is or are situated, bears to the total cars so reported by all carrier freight agencies in such rate territory.

All Expense and Taxes: See Cost.

Any Quantity Rate: A rate that makes no distinction between carload and less than carload freight.

Apportioned Expense: (Freight) Amount of expense incurred in providing transportation: (a) Common to and apportioned between freight and passenger services in accordance with the order of the Interstate Commerce Commission; and/or (b) common to and apportioned between two or more localities, functions or services in accordance with orders of the carriers' chief accounting officer or in accordance with directions accompanying inquiries of this section.

Apportioned Taxes: (Freight) Amount of tax accruals apportioned between localities, functions, or services in accordance with the proportion which the total operating expense of each bears to the grand total operating expense.

Assemblage: Work or expense in assembling vehicles for or during or after movement, and in the case of railways, chargeable to primary accounts 372 to 375, 377 to 389, 392 to 401, inclusive, and 404, 405 and 406, equated for supervision.

Atlantic Coastwise (and Inland) Water Carriers: Water line operators engaged in coastwise transportation along the Atlantic Coast between Maine and Florida and on tributary rivers and bays.

Atlantic Gulf Water Carriers: Water carriers whose major operations are between the Gulf of Mexico and Atlantic Coastal Ports.

Auxiliaries: Commodity classes embracing materials which have undergone complete processing but which are for use principally or chiefly in construction, building or manufacturing purposes, including masonry material, refined petroleum and its products, chemicals and similar manufactured materials.

Average Haul: As applied to freight, the average distance in miles one ton is carried, computed by dividing the number of ton miles by the number of tons carried, whether for an individual railway or for a group of railways, in either case representing the haul per railway. For the United States as a whole, it is computed by dividing the total ton miles by the tons of freight originated, representing the complete haul by giving effect to the fact that some freight originates on one railway and reaches a destination on another. For rate territories, it is the quotient obtained by dividing the ton miles by the equated, net tons.

Average Load: Quotient obtained by dividing number of tons (excluding l.c.l. freight) originated by a given carrier or group of carriers by the number of carloads originated by such carrier or group of carriers.

Average Load Haul: Quotient obtained by dividing the net ton miles of a given traffic by the loaded car miles utilized in handling such traffic.

Average Revenue Per Car: Quotient obtained by dividing amount of freight revenue for a given period by the number of cars originated during such period.

Average Revenue Per Ton Mile: Quotient obtained by dividing amount of freight revenue either in total or by individual commodities for a given period by the tons of such commodity or commodities carried one mile during such period.

Baggage: All property handled in passenger service except mail and express. It is classified into luggage, commercial baggage, commercial freight and company material.

Base Year: Calendar year 1932 except where otherwise stated.

Benefits: The good, improvement or profit resulting directly or indirectly to a carrier wholly or partly resulting from an increase in revenues, a reduction in expense, or from utility in the performance of service requirements.

Betterments: Improvements of existing facilities through the substitution of superior parts, for inferior parts retired, such as the substitution of steel-tired wheels for cast wheels under equipment, the application of heavier rail in tracks, and the strengthening of bridges by the substitution of heavier members.

Box Car: Car with sides inclosed and having a roof, used for general service and especially for lading which should be protected from the weather.

Branch Line: Continuous section of railway over which a through freight (or passenger) train is not regularly operated each business day.

Caboose: Freight-train car usually attached to the rear of train for the use of trainmen in giving and receiving signals, handling car records and performing other duties. Sometimes used incidentally for passengers, especially livestock caretakers.

Canada Railways: Railways (including American railway corporations) owned, controlled or operated by a company organized under the laws of the Dominion of Canada.

Capital Service: Return accruable on investment in carrier facilities.

Car: Vehicle used by railways for the transportation of freight traffic. Unless otherwise specifically stated, it includes only loaded freight cars upon which freight revenue is accrued, under primary accounts 101, 110, 111, 112 or account VIII "Transportation for Investment Credit".

Cars: Vehicles, conveyances, equipment and/or parts utilized in the transportation of freight traffic.

Car Days: Elapsed time in days of twenty-four hours each between the time a car is placed by the shipper for loading and the time it is released by the consignee after unloading.

Car Float: Vessel equipped with tracks for the purpose of transferring railway cars by water.

Cars Handled: Number of loaded cars moved in line or terminal service by a carrier or group of carriers, counted once for each carrier handling same.

Carload or Car Lot: Shipment of a carload of freight at a [illegible]ich is determined by the minimum weight of the shipment for which the [illegible] will require payment.

Car Maintenance: Work or expense chargeable to primary accounts 31[illegible] to 316, inclusive, equated for supervision, plus the freight proportion of primary accounts 503 and 536.

Car Mile: Movement of a freight car one mile. Unless otherwise specifically stated, it includes only the movement of cars loaded with revenue freight one mile.

Cars Originated: Number of loaded revenue cars, the transportation of which is begun on the line of a given carrier or group of carriers or within a given geographic area.

Car Ton Mile: Movement for a distance of one mile of a ton of 2,000 pounds of the weight of train and contents, excluding weight of locomotive and tender.

Cargo: Shipment utilizing the capacity of a ship train or pipe line.

Cargo Carrier: Water private and contract carriers, and pipe line carriers.

Carload: For the purpose of reporting, a shipment of not less than 10,000 pounds of one commodity from one consignor to one consignee. Where mixed carload ratings are provided in classifications or tariffs, a mixed carload is treated as a carload within the meaning of this paragraph, provided such shipment is from one consignor to one consignee at one destination or, in the case of shipments upon which stop-overs are permitted, from one consignor to two or more consignees each at a different destination; and provided the shipment is waybilled at and the charges are collected upon the basis of the carload rate applicable. In such cases the shipment is treated as a carload of that commodity which forms the major portion of the shipment in weight.

Carrier: A common carrier by railway, waterway, airway and, where specially noted, also by highway.

Central East Junctions: Interior points in Central East States where railways interchange freight traffic.

Central East Railways: Class I railways (except where otherwise noted) whose lines lie principally in Central East States. These carriers are listed in Appendix I.

Central East States: New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Ohio, Indiana, Illinois and Michigan.

Central Territory: States of Ohio, Indiana, Illinois, Michigan (south of Great Lakes) and that part of Wisconsin on and east of the Green Bay-Freeport line.

Charges: Rates, fares, prices, allowances, classifications, absorptions and/or any compensation demanded for the performance of any service.

Cheyenne-El Paso Line: Boundary between Western Trunk Line and Southwestern Territories on the one hand and Pacific Southwest Territory on the other from Cheyenne along the Colorado and Southern Railway through Denver and Pueblo to Trinidad; thence along the Atchison, Topeka and Santa Fe Railway through Raton, Santa Fe, Albuquerque to El Paso.

Cheyenne-Ogden Line: Boundary between Pacific Northwest and Pacific Southwest Territories - line of the Union Pacific Railroad from Cheyenne to Ogden.

Circuity: Excess vehicle miles of an actual or composite movement expressed as a percentage of the distance in car miles necessary for the same movement by the most direct route in common use.

Class I Railways: Railways so classed by the Interstate Commerce Commission.

Class of Service: Grouping of carrier services in accordance with location or objective. Location classes of service are: Road, yard and office. Objective classes of service are: Line, terminal and overhead.

Classes of Terminal Service: Grouping of terminal operations with respect to their character. Classes are: Station service; classification of cars; transfer service; interchange and delivery.

Classification Service: Sorting or marshalling of cars in a terminal in station or delivery order.

Commission: Interstate Commerce Commission.

Commission Agency: Agency selling carrier freight service, or soliciting freight traffic for a carrier upon a commission basis of compensation.

Commodity Classes: Grouping of commodities in the report for the purpose of classification into six classes or groups: I. Rough Material; II. Raw Material; III. Semiprocessed Material; IV. Necessaries; V. Auxiliaries; VI. Accessories.

Commodity Groups: Grouping of freight commodities into cognate groups for the purposes of ratemaking and/or statistics. The grouping of freight commodities is shown in Analysis.

Commodity Rating Groups: See Commodity Classes.

Company Service Equipment: Officers' and pay cars, ballast cars, steam shovels, derrick and wrecking cars and other work equipment mounted for movement by rail.

Conduct: To direct, manage, superintend, supervise, operate, maintain, perform, administer or discharge any duty, function or business.

Connection Delivery or Connection Switch Delivery: Cars handled out of the original terminal area by the initial road-haul carrier but originating within such terminal area on the tracks (house, team or industry) of another carrier; or cars handled into the destination terminal area by the final road-haul carrier but terminating within such terminal area on the tracks (house, team or industry) of another carrier.

Consignee: The party to whom freight is billed or forwarded.

Consignor: One who ships freight.

Consolidation: The union of two or more existing corporations into a new corporation, which, through the consolidation, acquires all of the property of the uniting corporations, assumes all of their obligations, and issues its capital stocks in exchange for those of the uniting corporations in ratios fixed in the agreement for consolidation.

Container Car: Flat or drop side gondola cars, suitable for the transportation of containers interchangeable between railway and highway vehicle chassis.

C5 Container: Container interchangeable between railway and highway vehicle chassis, approximately 10 feet long, 8 feet wide and 8 feet high, outside dimensions.

C10 Container: Container interchangeable between railway and highway vehicle chassis, approximately 20 feet long, 8 feet wide and 8 feet high, outside dimensions.

Control: To direct, manage, superintend or supervise any act, work, business or function.

Conveyance: Road transportation, roadway power and car maintenance.

Coordinate: To integrate, unify, harmonize, synchronize carrier facilities, service, operations or charges.

Coordination: The act of coordinating.

Cost: Total outlay, actual or accrued, to provide transportation of freight traffic, including taxes and operating rents paid, but excluding interest or dividends.

Dead Weight: Tare weight of freight vehicles and locomotives.

Delivery: All assemblage operations (classification, transfer, interchange and industrial) involved in originating or terminating cars on tracks (house, team or industry).

Density of a Commodity: Weight in pounds per cubic foot.

Density of Traffic: Amount of traffic measured by train miles, car miles, schedules, schedule miles, gross ton miles, net ton miles, or other appropriate unit per route mile, per schedule mile, per vehicle mile, during a month, year or other period of time.

Depot or Freight Depot: Station where freight is received by a carrier for transportation or is delivered by a carrier to the consignee after transportation.

Depreciation: The loss in service value not restored by current maintenance and incurred in connection with the consumption or prospective retirement of physical property in the course of service from causes against which the carrier is not protected by insurance, which are known to be in current operation, and the effect of which can be forecast with a reasonable approach to accuracy.

Destination: Terminus of the shipment.

Destination Railway: Railway handling shipment for the last part of the road movement.

Direct Expense: Outlay, actual or accrued, solely for the transportation of freight traffic and allocatable, without apportionment, to a single accounting jurisdiction of the carrier.

Direct Freight Charges: As applied to company material, specific freight charges paid to other railways and not included in the invoice.

Directive Cost: Expense incident to the administration and general direction of carrier operations.

Division: The amount of revenues accruing from joint traffic distributable to one or more of the carriers participating in the handling of such traffic.

Division: When applied to pricing or ratemaking, the proportion in which a through or joint rate or charge is divided between participating carriers.

Drag Freight Train: Any through freight train except manifest freight trains.

Dock Expense: Port expenses of a marine carrier, exclusive of station.

East: New England, Trunk Line and Central Freight Association Territories.

Eastbound: The direction of movement as applied to freight cars, including northbound.

Eastern District: New England and Central East States.

Empty Car Miles: Miles run by freight cars without load, excluding company service equipment designed for use exclusively in work service.

Equated Cars: Loaded cars handled by one or more carriers counted but once. For the United States it is deemed to be cars originated. For a single carrier or a group of carriers it is deemed the equivalent of one-half the cars originated and/or terminated by such carriers plus one-half the cars interchanged with other carriers (outside the carrier group). For a rate territory it is deemed the equivalent of that proportion of the cars handled within that territory which the equated cars handled by the carrier group serving such territory is of the cars handled by such carrier group.

Equated for Supervision: Surcharge upon direct primary accounts of a proportion of common supervision accounts. With respect to maintenance of way primary accounts 202 to 272, inclusive, excluding 247 and 248, the surcharge is a proportion of the aggregate charges to common maintenance accounts 201 and 273 to 279, inclusive and 326 to 328, inclusive. With respect to maintenance of equipment accounts 308 to 325, inclusive, the surcharge consists of accounts 301 to 307, inclusive, and 329 to 337, inclusive. With respect to transportation primary accounts 372 to 408, inclusive, excluding 390, 391 and 407, the surcharge consists of accounts 247, 248, 371, 390, 391, 407, 410, to 417, inclusive and 420.

Equated Net Tons: The number of net tons handled by a carrier, group of carriers or in a rate territory counted but once in each case. Computed in the same manner as equated cars.

Equated Ton: Weight of loaded car and contents.

Equated Ton Mile: Movement for a distance of one mile of the weight of loaded cars and their contents.

Equated Track Miles: A constructive item based on a weight of 100 for first main track, 80 for additional main track, and 50 for all other tracks operated; mileage under trackage rights is excluded.

Equipment: Any vehicle, railway, highway or waterway used in freight service.

Equipment Rents: Rents for the use of the equipment of other carriers and private car lines excepting equipment included in the general lease of a road to the operating company.

Expense: Outlay, actual or accrued, incurred in the transportation of freight traffic, exclusive of taxes, rents, interest or dividends.

Expenses of Miscellaneous Operations: The expense of operating miscellaneous physical property not devoted to transportation, the investment in which can be segregated from that in road and equipment. Not to be confused with expenses of miscellaneous railway operations.

Expense Ratio: Quotient obtained by dividing an aggregate expense or expenses of a given service by the amount of revenue received from such service.

Express: Traffic handled or revenues received therefrom by a carrier for the transportation of property in expedited service, and with respect to railway carriers, property handled under express privilege contracts.

Facility - Facilities: Any unit or units of property, real or personal, utilized in carrier service.

Facilities: Any and all instrumentalities, property or things, or parts, used or usable in the transportation of freight traffic.

Field Expense: Gathering and distributing expenses of pipe lines.

Final Road Haul Carrier: Carrier moving a shipment into that terminal area within which the shipment is finally delivered to the consignee.

Financing: Procurement of funds for operative investment or refunding purposes by the issuance, securing, promotion, sale of stocks, bonds, debentures or other obligations of any sort or kind.

First Main Track: As applied to line-haul roads, a single track extending the entire distance between terminals, upon which the length of the road is based, used to effect a line haul and, therefore, kept clear for the passage of trains.

Fixed Property: Carrier property other than equipment.

Floatage: Work or expense chargeable or which would be chargeable to railway primary account 408, equated for supervision.

Flat Car: Freight car having a floor laid over its sills and without any housing or body above.

Foreign Car: Car not owned by the railway by which it is at the time being handled.

Freight - Freight Traffic: All property transported for hire, except mail, baggage and express.

Freight Agency: Branch field office or bureau maintained for the purpose of promoting the sale of freight service. Sometimes called "traffic agency", "outside agency" or "solicitation agency". Two classes of agencies are considered: "On line agency", an agency located in a city directly served by the carrier maintaining the agency and "off line agency", one located in a city not so served.

Freight Car Miles Per Car Day: Total freight car miles, including loaded and empty for a period divided by the average number of freight cars on line, including serviceable and unserviceable, divided by the number of days in the period.

Freight Cars On Line: Home cars, foreign cars and private-line cars, but not cabooses or company service equipment, computed for the month by dividing by three the aggregate count of cars as of the first and fifteenth of the month, and the first of the succeeding month.

Freight Commodities: The articles of commerce grouped in accordance with the Commission's classification of Freight Commodities.

Freight Expense: The amount allocated or apportioned to freight service by primary accounts and in the case of railways in accordance with the order of the Commission for the separation of freight and passenger expenses.

Freight Revenue: Revenue from the transportation of freight and from transit, stop-over, diversion and reconsignment arrangements, upon the basis of tariffs, including the carrier's proportion of revenue on interline shipments. In cases of income statements, it does not include revenues for feeding and icing or advances accruing to other than carriers.

Freight Service Operating Expenses: The sum of the operating expenses directly assignable to the freight service, an apportionment of the expenses common to both freight and passenger, and an apportionment to freight of the expenses neither solely related to nor common to freight and passenger.

Freight Train: A unit or a combination of units or equipment (exclusive of light locomotives), moving over tracks by self-contained motor equipment in connection with the transportation of revenue and company freight, whether loaded or empty.

Freight-Train Car: A freight-carrying car, caboose or other train service equipment required in the operation of a freight train.

Function Cost: A cost distributed in accordance with the nature of the work done, such as maintenance of way, maintenance of power, maintenance of car, transportation, etc.

Gateway: Junction for the interchange of freight of two or more railways of different regional groups and chiefly of interterritorial shipments.

General Expense: Expenses of the executive, administrative, accounting, financial, law, real estate, tax and claim departments of a carrier.

Gondola Car: A car with sides and ends but without a top covering, the floor or bottom being level or approximately so, and used for freight in bulk. Types: High side, low side, drop end, drop bottom, general purpose and convertible.

Great Lakes Southwest Pipe Lines: Pipe lines between the Great Lakes and Oklahoma, Texas, Arkansas and Louisiana.

Great Lakes System Water Carriers: Carriers operating on the Great Lakes, St. Lawrence River System and the New York Barge Canal.

Green Bay-Freeport Line: Boundary between Central Freight and Western Trunk Line rate Territories - along western shore of Green Bay to City of Green Bay; thence along the Chicago & North Western Railway to Menesha; thence along the Minneapolis, St. Paul and Sault Ste. Marie Railway to Fond du Lac; thence along the Chicago & North Western to Watertown; thence along the Chicago, Milwaukee, St. Paul and Pacific Railroad to Madison; thence along the Chicago & North Western to Dodgeville; thence along the Illinois Central Railroad to the Illinois State line.

Gross Ton Mile - Gross Ton Miles, Inc: Movement for a distance of one mile of a ton of 2,000 pounds of the weight of train equipment and contents, including weight of locomotive and tender.

Gross Ton Mile Ex: Same as car ton mile.

Handled or Handling: The receipt, delivery, interchange or intermediate switching of freight traffic in a terminal.

Highway Carrier: A common or contract carrier by highway.

Hire of Freight Cars: Rents paid for the use of freight cars, either of private car lines or of other railways, except for cars included in the general lease of a road to the operating company.

Home Car: A freight car owned or leased. It may include one that is owned or leased by another operating railway in the same system.

Hopper Car: A car with sloping floor which will discharge a major portion or its entire load by gravity through hopper doors.

Hourly Basis: As used in the I.C.C. wage statistics, this term refers to the reporting of the time worked in certain occupations on the basis of the number of hours worked.

Hours (or Days) Paid For: The time of an employee forming the basis for computing his compensation, including straight time actually worked, overtime paid for at pro rata rates, overtime paid for at punitive rates, time paid for but not worked, and constructive allowances (train and engine service).

House Track: Track within a terminal area serving the freight station of a carrier on which and at which cars are loaded and unloaded.

Hudson River Gateways: Points of interchange between New England and Central East railways, such as New York City, Maybrook, Albany, Troy, Rouses Point, etc.

Imports: Goods brought into the Continental United States.

Improvement: Extensions, additions or betterments of any facility.

Incidental Operating Revenue: Revenue from services and facilities, the expenses of the operating and maintenance of which are not separable from rail-line operating expenses, and from incidental sources not provided for otherwise, such as dining and buffet service on trains, hotel and restaurants, concessions, storage, demurrage, telegraph and telephone, elevators, stockyards and power plants.

Industrial Assemblage: Switching of cars on, to or from industry tracks, excluding classification, transfers and interchange.

Industry Track: Track upon which system trains receive or deliver freight to or from patrons under a contract, arrangement or practice, where such patron or group of patrons are served to the exclusion of the general public, such as industrial spur tracks, industrial side tracks, plant facility tracks or industrial connecting tracks.

Initial Road-Haul Carrier: Carrier moving a shipment out of the terminal area within which the shipment is originally received from the consignor.

Inland Waterway Carriers: Carriers operating on the Mississippi, Warrior and tributary rivers.

Intercarrier Traffic: Interline traffic.

Intercarrier Train: Through or joint train operated as a single service over the lines of two or more carriers, usually, but not necessarily, of different regional groups.

Interchange: Transfer of a shipment moving on a through bill of lading over a joint route of two or more carriers from one to another of the carriers whose lines constitute all or part of such joint route.

Intercarrier Interline or Traffic: Traffic handled by two or more road haul carriers.

Interline Shipment or Interline Freight: Shipment moving on a through bill of lading over a joint route composed of the line of two or more carriers.

Interior Junction: Junction for the interchange of freight of two or more railways within the same regional group of carriers.

Intercoastal Water Carriers: Water carriers plying between Atlantic and Pacific Coastal Ports in the United States.

Intermediate Carrier: Carrier other than the origin or destination carrier participating in the movement of interline shipments.

Intermediate Movement: Movement over the line of an intermediate carrier.

Intermediate Switching: Switching within a terminal area of shipments by a carrier upon whose tracks within such area such shipments neither originate nor terminate and which switching carrier is not the road-haul carrier with respect to such shipment either into or out of the terminal area.

Intermediate Terminal: Terminal area within which a shipment is handled but in which it neither originates nor terminates.

Intermediate Traffic: Bridge or overhead traffic handled, neither originated nor terminated, by the carrier (i.e., traffic received from and delivered to connections).

Intermediate Yarding: Any switching, movement or detention in a terminal of a car neither originating nor terminating therein, exclusive of the movement into, out of, or through the terminal in road trains.

Interterritorial Traffic: Traffic originated in one rate territory and terminated in a different rate territory.

Intraterritorial Traffic: Traffic originated and terminated within the same rate territory.

Joint Facilities: Any carrier facility used jointly or in common by two or more carriers.

Joint Facility Rent: Rent for the use of yards, tracks, stations, terminals and other facilities, used in common with the owner or other tenants.

Joint Revenues: Revenues accruing from joint traffic.

Joint Traffic: The transportation of freight traffic in which the services of two or more carriers are employed.

Legislation: When applied to pricing or ratemaking, any function directly or indirectly connected with the making of rates.

Light Freight Train: A train consisting of a locomotive and caboose, running without other cars in connection with freight-train service.

Line Cost: Cost of providing line service.

Line Service: All road service and yard service at intermediate terminal areas, including station service incident to both.

Loaded Car: A railway car under load (carload or l.c.l.).

Local Traffic: Traffic handled by a single road-haul carrier.

Locational Cost: A cost distributed according to the place where the work is done, such as main line, branch line, yard and road.

Locomotive: A self-propelled unit of equipment designed solely for moving other equipment. A light locomotive is one moving under its own power, not coupled to cars.

Locomotive Day: Twenty-four hours of the time of one of the number of locomotives in service whether owned, leased or rented, excluding owned locomotives in service on other roads.

Locomotive Maintenance Expense: Amounts chargeable to Commission's primary accounts 308 to 313, inclusive.

Locomotive Mile: The movement of a locomotive a distance of one mile under its own power.

Locomotives On Line: The number owned, leased or rented in service (excluding owned locomotives in service on other roads), computed for the month by dividing the total number of locomotive days of 24 hours by the number of calendar days in the month.

Locomotive Ton Mile: Movement of the weight of the locomotive and tender a distance of one mile.

Mail - Mail Traffic: The transportation of letters, papers, parcels and other property contained in the public post.

Main Line: A continuous section of railway over which one or more through freight or (through passenger) train is regularly operated every business day

Main Line Train: Train operated on main lines.

Maintain - Maintenance: To repair, renew or replace facilities or the act thereof.

Maintenance: The act (repair, replacement, renewal) of continuously and currently keeping carrier property, as a whole or parts thereof, in a condition for efficient operative utilization.

Maintenance Expense: The outlay, actual or accrued, necessary for maintenance. It includes the expense of repairs, renewals, replacement, depreciation and retirements.

Major Terminal District: All common switching areas (excluding metropolitan terminal districts) where one or more switching crews were employed by a carrier during the greater part of the year 1932, in each of the rate territories (q. v.) grouped into one major terminal district for such rate territory. A station may be a major terminal area on the line of one carrier and a minor terminal area upon another carrier, depending upon whether or not switching crews were employed during 1932.

Manifest Freight Train: Through freight train, the cars or character of equipment handled of which is limited because of the speed at which the train is scheduled or regularly operated.

Metropolitan Area: A city and all surrounding territory, cities, towns and suburbs which with it constitute a social, economic, retail trade and physiographic unit connected by a system or systems of suburban service.

Metropolitan Terminal District: One of the specifically named terminal areas ordinarily embracing one or more cities of 100 thousand inhabitants or more, together with the entire area, rural and urban, embraced within the carrier's terminal operating area within which such city or cities is (or are) situated.

Middle Atlantic States: New York, New Jersey, Pennsylvania, Delaware, Maryland and District of Columbia.

Miles of Route: See Route Miles.

Minimum Carload Weight: The lowest weight upon which a carload rate is applicable.

Minor Terminal District: All stations at which freight was collected or delivered during the year 1932 but at which no switching crews were employed by the reporting carrier. Within each rate territory (q. v.) are grouped into a single minor terminal district for such rate territory. A station may be a minor terminal on the line of one carrier and a major terminal area on another carrier, depending upon whether or not switching crews were employed during 1932.

Miscellaneous (Railway) Operations Expenses: Expenses incurred in conducting dining and buffet service, hotels and restaurants, grain elevators, stockyards, production of power for sale, cotton compress plants, ice supply plants, etc., when the cost of facilities is includible in the road and equipment accounts and all or a proportion of the expense is assignable to commercial operations. Not to be confused with expenses of miscellaneous operations.

Mixed Train: A train run regularly for the transportation of freight and passenger traffic.

Multiple Carrier Terminal Delivery: Delivery of a shipment within a terminal area involving switching by two or more carriers.

Necessaries: Commodity classes embracing the necessaries of life which have undergone practically complete processing including dried vegetables, syrups, oils, animal products, groceries, flour and meal, beverages, furniture and furnishings, textiles, clothing and similar necessaries.

Net Ton Mile: Movement of a ton of revenue freight of 2,000 pounds a distance of one mile.

New England Junction: Interior junctions in New England where freight shipments are interchanged.

New England Railways: Railways whose lines lie principally in New England States. They are listed in Appendix I.

New England States: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

New England Territory: States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

North Atlantic Coast Pipe Lines: Pipe lines between North Atlantic Seaboard, Great Lakes and Eastern Ohio.

Northwest Junction: Interior junction in Northwest States where freight shipments are interchanged.

Northwest Railways: Railways whose lines lie principally in Northwest States.

Northwest States: Western Trunk Line and Pacific Northwest territories.

Obligation: Any debt, liability or indebtedness, owing, accrued or claimed.

Off Line Agency: Traffic agency located in a city not directly served by the carrier maintaining the agency. See Agency.

On Line Agency: Traffic agency located in a city directly served by the carrier maintaining the agency. See Agency.

On Track Industry: Industry served by a railway directly through an industry track.

Operating District: Grouping of operating divisions of all railways in various States into a single group. In cases where an operating division embraces lines in more than one State, it is placed in the district of the State wherein its preponderant mileage lies.

Operating Division: Smallest segment of a railway for which operating statistics are separately kept.

Operating Expense: Expense of furnishing transportation, including maintenance of fixed property and equipment used therein.

Operating Ratio: Quotient obtained by dividing operating expenses by operating revenues.

Operating Rents: Equipment and joint facility rents.

Operating Reserves: Reserves created by charges to operating expenses for maintenance of road and equipment, for personal injury, loss and damage and other claims and for similar purposes, such charges being made currently for the purpose of equalizing charges to operating accounts from month to month.

Operating Revenue: Revenue receivable for freight transportation.

Ordinary Freight Train: A train consisting of a locomotive, with or without caboose, with other freight-train cars.

Origin Railway: Railway issuing bill of lading and upon which the shipment is first moved in road-haul service.

Originated Traffic: The initial receipt of freight traffic by a carrier from the shipper.

Overall Speed: Quotient obtained by dividing the number of miles by the number of hours elapsing between the movement from the place where vehicle is loaded by consignor to the place where unloaded by consignee.

Overhead Cost: Administration and tax cost.

Pacific Coast Pipe Lines: Pipe lines in California.

Pacific Coastwise (and Inland) Water Carriers: Water line operators engaged in coastwise transportation along the Pacific Coast between Puget Sound and Southern California and on tributary rivers and bays.

Pacific Northwest Territory: States of Washington, Oregon, Idaho, Montana and that part of Wyoming north of Cheyenne-Ogden line.

Pacific Southwest Territory: States of California, Nevada, Utah, Arizona, that part of Wyoming on and south of Cheyenne-Ogden line and that part of Colorado and New Mexico west of Cheyenne-El Paso line.

Passenger Revenue: Revenue receivable for the transportation of passengers, including tariff fares, extra fares, reserved car surcharge and additional fares for exclusive use of space.

Passenger Service: Transportation of persons and property in carrier passenger trains or vehicles.

Passenger Service Expense: Expense of transporting persons and property in carrier passenger service.

Passenger Service Revenue: Revenue receivable for the transportation of persons and property in carrier passenger service.

Passenger Traffic: Persons handled in passenger service.

Peddler Car: A car containing freight from one shipper from which the contents are distributed en route at various intermediate points.

Per Diem: See Hire of Freight Cars.

Per Diem Reclaim: An exemption of switching and terminal roads from payment for car hire for a specified number of days to protect their switching revenue.

Platform Cost: The cost of handling l.c.l. freight between freight house, platform and cars.

Pocahontas Territory: States of Virginia and West Virginia.

Power Maintenance: Work or expense of maintaining power and in the case of railways chargeable to primary accounts 231 to 236, inclusive, 308 to 313, inclusive, 323 to 325, inclusive, all equated for supervision.

Proportional Rate: A specific rate to or from a basing point for combination with other proportional or local rates to form a through rate.

Pricing: Making of rates for the transportation of freight traffic and the promulgation and publication of tariffs for the carriers thereof.

Primary Account: One of the expenditure accounts of the Commission's Classification of income or operating expense accounts.

Primary Commodity Groups: Grouping of commodities into cognate groups. The compositions of these commodity groups are shown in Analysis.

Products: Goods produced in the Continental United States.

Promulgate - Promulgation: To make, determine, establish, provide and/or publish, or the act thereof.

Rail-Line Transportation Revenue: Revenue from transportation in trains, from switching service, and from local water transfer service, necessary to complete a rail movement. It does not include incidental operations such as the furnishing of meals, storage of freight, etc.

Railway: A common carrier by railway; and unless otherwise noted a Class I railway.

Rate Ceiling: Maximum rate which carriers can charge without unduly restricting the movement of freight traffic either because of inherent price or because of the availability of a cheaper mode of transportation by the shipper.

Rate Territory: A geographic division of the country for ratemaking purposes or for railway joint freight traffic bureaus or associations. The rate territories used are: New England; Eastern Trunk Line; Central Freight Association; Pocahontas; Southern Freight; Western Trunk Line; Southwestern; Pacific Northwest; and Pacific Southwest.

Raw Materials: Commodity classes embracing grain, fresh vegetables, live animals, coal and coke, crude liquids, ores, lumber, fertilizer and similar raw materials.

Rebilling: Issuing an additional waybill to extend or complete the final haul of freight.

Reciprocal Switching Rate: A rate charged one carrier by another carrier, usually lower than the commercial rate, for switching inbound or outbound carloads customarily absorbed by the line-haul carrier.

Reconsignment of Cars: Changing in accordance with tariff provisions, shipments consigned to one consignee or one destination to another consignee or destination.

Regional Group: When applied to states, means a homogeneous area of the United States, comprising two or more states and when applied to railways, means a group of railways whose lines chiefly serve the same regional group of states.

Released Rate: A rate based on a limitation of the carrier's liability for loss and damage, and therefore less than a rate applying without such limitation.

Rents: Equipment and joint facility rents.

Reported Tonnage: Tonnage reported by railways, boat lines, pipe lines or shippers in response to inquiries of the Section.

Reporting Carriers: Railways, highway and waterway carriers answering the questionnaires respectively relating to them.

Reporting Shippers: Shippers replying to the Shipper Carload Traffic Survey.

Revenue: Amount of money which a carrier becomes entitled to receive from transportation and operations incident thereto.

Revenue Car: Car containing a shipment or shipments transported by a carrier for hire.

Revenue Freight: A local or interline shipment from which earnings accrue to the carrier upon the basis of tariff rates.

Revenue Freight Carried: Shipments of revenue freight originated on the line, or received from connecting carriers.

Revenue Freight Originated: Shipments not identified as having had previous line-haul transportation by other rail carriers, including import traffic and traffic from outlying possessions of the United States received from water carriers at the port of entry, finished products from transit points, and shipments rerouted from concentration points.

Revenue Freight Terminated: Shipments delivered directly or indirectly to consignees, not identified as subject to further line-haul transportation; and including export traffic and traffic destined to outlying possessions of the United States delivered to water carriers at the port of clearance, and products delivered at transit points for finishing processes.

[illegible] Ratio: Quotient obtained by dividing a given expense by the total [illegible] Revenue.

Revenue Shipment: Shipment transported by a carrier for hire.

Revenue Tons: Tons of shipment or shipments transported by a carrier for hire.

Road Cost: Cost of providing road service.

Road Haul: Movement of a shipment from one terminal area to another terminal area.

Road-Haul Carrier: Carrier moving a shipment between terminal areas.

Road-Haul Interchange: Interchange between carriers, within a terminal area, of shipments which neither originated nor terminated within such area.

Road Maintenance: Work of maintaining a carrier's road, and in the case of railways, expense of which is chargeable to primary accounts 249 to 272, inclusive, 229, 230, 259 to 272, inclusive, all equated for supervision.

Road Service: Movement of a shipment between terminal areas.

Road Service Expense: Road Transportation.

Road Train to Road Train Cars: Cars arriving in a terminal area in a carrier's road train and moving out of the same terminal area in the road train of the same carrier.

Road Transportation: Work or expense of moving freight between terminals and in the case of railways chargeable to primary accounts 372, 392 to 401, inclusive, 404, 405 and 406, equated for supervision.

Rough Materials: Commodity classes embracing sand, stone, gravel, logs, piling, timber, sugar beets and similar commodities.

Route Miles: Number of miles over which a carrier regularly operates freight service.

Routing: The determination, prescription, establishment of through or joint routes, the provision of reasonable facilities, rules and regulations for operating same, and the carriers or junctions over or through which joint traffic shall flow.

St. Louis-Kansas City Line: Boundary between Western Trunk Line and Southwestern Territories - along the Missouri Pacific Railroad to Labadie, Missouri; thence along the Chicago, Rock Island and Pacific Railway to Kansas City.

Sales Organization: The arrangement and systemization of sales functions and carrier personnel into a unit designed to promote the sale of freight service.

Sales Promotion: Promotion of a carrier sales organization to the end that it will ascertain and arrange for the satisfaction of the service and price requirements of shippers and receivers of freight; locate, appraise, contact and develop freight traffic markets; disseminate freight traffic service information; arouse and stimulate the transportation of freight traffic; and thereby incite the purchase of carrier service.

Schedule: The integrated movement of one or more carrier vehicles, such as a train, tow, boat, truck or tractor with or without trailers.

Schedule Mile: Movement of a schedule one mile.

Selling Expense: Expense of directing or supervising the solicitation of carrier traffic.

Semiprocessed Materials: Commodity classes embracing metals (in pig, ingot, etc.) fibres (cotton, wool, etc.) hides and crude rubber, salt, ice first processed paper products, horticultural supplies and materials, scrap materials and similar commodities.

Service - Services: Any operation, method, practice, function or act performed by or incident to the transportation of freight traffic, wholly or partly by carriers.

Service Cost: A cost distributed in accordance with the service objective of the expenditure, such as passenger, freight, line and terminal.

Service Unit: A transportation using measuring service rendered such as tons, cars, ton miles, car miles, train miles, etc.

Service Unit Cost: Quotient of aggregate cost of a given operation and the number of particular service unit.

Shipment: Consignment of freight transported by a carrier for hire from one consignor to one consignee.

Shipments Originated: Number of shipments, the transportation of which is begun on the line of a given carrier or group of carriers or within a given geographic area.

Single Carrier Terminal Delivery: Terminal delivery in which switching of a single carrier is involved.

Solicitation: Effort to incite the purchase of a particular carrier service.

South - Southeast - Southern District: Pocahontas and Southern Freight Territories.

Southeast Junctions: Interior junctions in Southeast States at which railways interchange freight shipments.

Southeast Railways: Railways whose lines lie principally in the Southeast States.

Southeast States: West Virginia, Virginia, North and South Carolina, Georgia, Kentucky, Alabama, Florida, Tennessee and Mississippi.

Southeastern Territory: States of Kentucky, Tennessee, North and South Carolina, Georgia, Flo , Alabama, Mississippi and that part of Louisiana east of the Mississippi River.

Southwest Gulf Pipe Lines: Pipe lines between Oklahoma, Arkansas, Louisiana and Texas, and the Gulf of Mexico.

Southwest Junctions: Interior junctions in Southwest States at which railways interchange freight traffic.

Southwest Railways: Railways whose lines lie principally in the Southwest States.

Southwest States: Southwestern and Pacific Southwest States.

Southwestern Territory: States of Arkansas, Oklahoma, Texas and that part of Missouri south of St. Louis-Kansas City line, that part of Louisiana west of Mississippi River and that part of New Mexico on and east of Cheyenne-El Paso line.

Speed: Miles per hour of train or vehicle.

Spotting Cars: Switching to a specified location.

Standards: Determination, prescription and establishment of rules, norms, patterns, models, types and criterion for the acquisition, conduct, maintenance, improvement and operation of facilities or service.

Station Expense: Expense of maintaining stations and facilities; of station employees; and of transportation other than yard or road haul.

Station Maintenance: Work or expense of maintaining stations and in the case of railways chargeable to primary accounts 227 and 228, equated for supervision.

Station Terminal Service: Work of billing, receiving and delivering freight between carrier and shipper or between carriers.

Station Agency or Transportation: Work or expense of conducting business at stations and in the case of railways chargeable to primary accounts 373, 374 and 376, equated for supervision.

Switch Engine: Engine assigned for the movement of switching of cars within a terminal area or district.

Switch Engine Hours: Elapsed time, actual or constructive, for which switch engine crews are paid.

Switching Locomotive Miles: Mileage allowed train locomotives for performing switching service at terminals and way station and to yard locomotives in switching yards and at terminals including transfer service. Computed at the rate of 6 miles per hour for the time actually engaged in the service, a fraction of one-half hour or more to be taken as one hour.

Switching Paid; Amount paid by rail carriers to common rail carriers for switching cars to the final unloading tracks or from the origin loading track and also the amount paid for drayage to others than the shipper or consignee.

Tariff: A published schedule showing the rates, fares, charges, classification of freight, rules and regulations, applying to the various kinds of transportation and incidental services.

Taxes: Taxes imposed by any form of government whether based on an assessed value of the property, amount of stocks or bonds, earnings, income, dividends declared, (number of passengers) quantity of freight, length of road, rolling stock or other basis. It does not include special assessments for street and other improvements, nor special benefit taxes, such as water assessments.

Team Track: Track within a terminal area upon which cars are loaded and unloaded on, to or from trucks or wagons and drayed to or from the warehouse of the consignor or consignee.

Tenant Company: A carrier participating in the joint use of tracks, yards, terminals and other facilities under a contract licensing such use but not granting exclusive possession.

Terminal Allowance: Amount paid by a rail carrier to others than rail carriers for any service performed in connection with the collection, delivery, switching or unloading of cars on industry tracks served by such rail carrier, including plant facility allowances.

Terminal Cars - Terminaling: The origination or termination of a car in a terminal.

Terminal Cost: Cost of providing terminal service.

Terminal District: Terminal area within which freight traffic is originated or terminated by the carrier. Terminal districts are of three classes: Metropolitan terminal districts; major terminal districts; and minor terminal districts.

Terminal Service: Yard service at origin and destination of a shipment.

Terminated Traffic: Traffic delivered by the carrier to the consignee.

Terminating Carrier: Final road-haul carrier (carrier possessing the waybill) of traffic terminated either upon the line of such carrier or by a connection switching delivery for its account.

Terminating Railway: See destination railway.

Through Train: (Freight or passenger). A train whose crew is paid "through" rates of pay.

Ton Mile: Movement of a ton of 2,000 pounds a distance of one mile. Unless otherwise stated or limited, it means net ton miles.

Ton-Mile Revenue: Amount of freight revenue divided by the number of net ton miles.

Tons Originated: Number of tons, the transportation of which is begun on the line of a given carrier or group of carriers or within a given geographic area.

Trackage Rights: Permission to use tracks operated by others for the movement of trains, but without exclusive possession. Also called running rights.

Trade Area: One of the 701 geographic areas into which the United States is divided from the standpoint of distribution or consumption of commodities. The areas used are those made by the International Magazine Company and adopted by the Research Division of the National Recovery Administration.

Trade Center: Principal or market town located within a trade area.

Traffic: Shipments of freight.

Traffic Expense: Expense of carrier sales promotion. With respect to railway carriers, it embraces the expenditures chargeable to primary accounts 351 to 359, inclusive.

Train: A unit or combination of units of railway equipment in condition for self-propelled movement over railway tracks.

Train Expense: Work or expense of moving freight between terminals and in the case of railways, chargeable to primary accounts 372, 392 to 401, inclusive, 404, 405 and 406, equated for supervision.

Train Hour: Elapsed time of freight trains and a proportion of elapsed time of mixed trains based on car miles in such trains between the time of leaving the initial terminal and the time of arrival at final terminal, including delays on the road, as shown by conductors' train reports or dispatchers' train sheets.

Train Mile: Movement of a train one mile.

Train Switching: Switching service performed by train locomotives at terminals and way stations. See Switching Locomotive Miles.

Transcontinent Gateways: Junctions at which western carriers interchange interterritorial shipments with eastern and southeastern carriers. The principal gateways are Chicago, St. Louis, Memphis, Helena, Natchez and New Orleans.

Transportation Expense: Expense of transporting persons and property exclusive only of maintenance and overhead expense - the expense of utilizing carrier facilities.

Transfer Service: Movement of cars from one track of a carrier to another track of a carrier not located in the same classification yard.

Transit Point: An intermediate point at which freight is held for finishing processes or other treatment.

Transport Charges: Amount charged by a carrier, common or contract for the transportation of freight, excluding any drayage or accessorial charges.

Transwest Gateways: Junctions at which northwest and southwest railways interchange interterritorial shipments. The principal junctions are St. Louis, Kansas City and Denver.

Trap Car: A car used within terminal limits for assembling and distributing, as a carload, l.c.l. shipments to or from private sidings of industries.

Trunk Line Territory: States of Delaware, Maryland, New Jersey, New York, Pennsylvania and District of Columbia.

Type of Service: Grouping of carrier services in accordance with the instrumentality used to perform it. Types of rail carrier service are: Through freight train, manifest freight train, drag freight train, main line way freight train and branch line way freight train.

Undercharges: Charges for transportation services, which are less than those applicable thereto under the tariffs lawfully on file with the Commission.

Vehicle: Any means or instrumentality of freight carriers including cars, automobiles, trucks, ships, tows and airplanes.

Vehicle Maintenance: Cost of maintenance of vehicles including depreciation, repairs and retirements. See Car Maintenance.

Vehicle Miles: Movement of a vehicle one mile.

Vehicle Ton Mile: Movement of the weight in tons of 2,000 pounds each of a vehicle and contents within a given schedule.

Water Common Carrier: Licensed carrier operating definite schedules over regular routes.

Water Contract Carrier: Carrier who procures cargo loads on contract basis rather than on the basis of published rates and who operates without definite schedules or regular routes.

Water Private Carrier: Carrier who has no regular schedules, routes or services and who handles shipments only of itself and affiliated companies.

Waybill: A form accompanying a shipment of freight showing the forwarding and receiving stations, the names and addresses of consignor and consignee, the car initials and number, the routing, the description and weight of the commodity, instructions for special services, the freight rate, total charges advances for previous services and the amount prepaid.

Way Freight Train: Freight train whose crew is paid at local or way freight rates of pay.

West: Western Trunk Line, Southwest, Pacific Northwest and Pacific Southwest Freight Territories.

Westbound: The direction of movement as applied to freight cars, including southbound.

Western Railways: Railways whose lines lie principally in the Western States. They are listed in Appendix I.

Western States - Western District: Northwestern and Southwestern States.

Western Trunk Line Territory: States of North and South Dakota, Minnesota, Nebraska, Kansas, Iowa, that part of Michigan north of Great Lakes, that part of Wisconsin west of Green Bay-Freeport line, that part of Missouri on and north of St. Louis-Kansas City line and that part of Wyoming and Colorado on south and east of Cheyenne-El Paso line.

Wharves and Dock Expense: Work or expense of maintaining wharves and docks and in the case of railways chargeable to primary accounts 241 to 244, inclusive, equated for supervision.

Yard: An area of tracks within the limits of which switching service is performed.

Yard Cost: Yard expense and taxes.

Yard Expense: Expense of performing yard services. It includes yard maintenance, station maintenance and operations; freight car service, power maintenance, yard transportation, expense of floating equipment and expense of wharves and docks.

Yard Maintenance: Work of maintaining carrier's terminal facilities and in the case of railways, the expense of which is chargeable to primary accounts 202 to 226, inclusive, 229, 230, 251 to 272, inclusive, all equated for supervision.

Yard Service: Movement, detention or servicing of shipments within a terminal area.

Yard Switching: Switching service performed by yard locomotives in yards where regular switching service is maintained, including terminal switching and transfer service in connection with the transportation of revenue freight and incidentally of company freight. See Train Switching.

Yard Track: Track, within the limits of a yard, used exclusively to effect switching service, provide storage of cars and serve other terminal purposes. Track extending through the yard, used as part of the main line, although used incidentally for switching movements, is not classed as yard track.

Yard Transportation: Work or expense in assembling vehicles for, during or after movement, and in case of railways chargeable to primary accounts 372 to 401, inclusive, and 404, 405 and 406, equated for supervision.

FEDERAL COORDINATOR OF TRANSPORTATION

Section of Transportation Service

FACTUAL SUMMARY OF UNDERLYING DATA

THE TRAFFIC

I THE UNDERLYING SURVEYS

1. Description of Underlying Surveys

General

The Report deals with the transportation of freight within the continental United States. Except where necessitated by the nature of the operations under review, less than carload traffic is not included within the scope of the surveys.

Freight traffic is transported in trains of freight cars moved on railways; by motor vehicles on highways; by steamships and barges upon the ocean, lakes, rivers and canals; and by pressure in pipe lines. Practically all rail freight transportation is provided by common carriers. Transportation by water is conducted by common and contract carriers and by private owners of the freight transported. Pipe line transportation is provided by common carriers generally, although the bulk of the freight transported is owned by companies affiliated with the owners of the pipe lines. Common carriage of freight by highway is confined largely to merchandise traffic, the bulk of other freight being transported either by contract carriers or by the owners of the goods.

Joint rate and route arrangements for intercarrier movement of freight generally prevail between carriers of the same type and but rarely with carriers of different type, except in the case of railway and waterway carriers, where such arrangements are quite prevalent.

Shipper In 1934 the Section sent out to approximately 40 thousand carload shippers an elaborate inquiry seeking rather complete information of their traffic movement during the year 1933. The list to whom this inquiry was mailed was compiled from the data made available from replies to the merchandise inquiry which had been sent to a much larger list (100 thousand), supplemented by all other lists available to the Section. The inquiry was one, the answers to which, in many cases, required extended work upon the part of the shipper. Instances were found where shippers voluntarily expended several thousand dollars to furnish the information requested.

Railway In 1933 the Section submitted to Class I railways and Class I switching and terminal companies* the rail carload traffic inquiry, which sought to survey rail freight traffic# with respect to its volume, origin, destination, distribution by freight commodities, services accorded it, line and terminal, and the cost, aggregate and unit, of providing such services. The inquiry was divided into three general sections:

First, a traffic analysis showing (1) commodity deliveries, by class of track service, by terminal districts; (2) commodity revenues and service units; and (3) traffic interchange by carriers and junctions.

Second, a yard and car service analysis showing (1) utilization (cars originated, terminated, interchanged or intermediately yarded) of yards (terminals); and (2) detailed operative and car service history of each car terminated in the United States on December 13, 1933, and particularly its origin, origin track service, commodity, destination, destination track service, revenue, car miles (direct and actual), tons, ton miles, reconsignments, interchanges, and time (loaded car days) detained by patrons at origin and destination, and by the carrier in origin and destination terminals, and in each intermediate yard en route, as well as its time in road trains.

Third, an operating cost analysis by terminal districts showing (1) the road service and costs separately for main line, manifest, drag and way trains, and for branch line trains; and (2) the yard service and unit separately for cars originated or terminated on the road haul carrier's house, team and industry tracks, for cars reciprocally switched to or from such initial or final tracks, and for cars interchanged or intermediately yarded in such terminals.

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* These carriers are listed in analyses 1.1 to 1.3 inclusive.

# Except insofar as necessary in order to account for joint freight service and costs, l.c.l. or merchandise freight, with respect to which a previous report has been made, is not included.

Power Data were obtained from manufacturers in the railway industry, locomotive builders, car builders and accessory equipment manufacturers, and builders of the internal combustion engines primarily of the Diesel type, in the United States, Canada, England and continental Europe.

Study was made of the feasibility of using the Diesel engine with electrical, mechanical and hydraulic transmission. In this search various types of engines and transmissions were investigated, as well as modern forms of high pressure steam engine equipment.

Since there were no precedents in successful operation of Diesel-mechanical drive, in the United States, other than one or two isolated cases of small capacity horsepower equipment, information was sought in England, France, Germany, Switzerland, Hungary, Italy, Sweden and Denmark, from manufacturers who were identified in building mechanical transmissions for Diesel traction.

The possibility of freight power cars with one, two or three trailers and moved by mechanical small Diesel-electric and high-pressure steam plants, using booster type locomotive also was investigated.

Vehicle The study of freight transport vehicles other than motive power units starts with the present freight cars of standard design, covers recent developments in improved car design, and then describes other vehicles which have been developed for transporting freight by rail, highway and water without breaking bulk during the entire journey. The description of these vehicles which are designed to coordinate transportation service is given under the following headings: Containers and container transfer equipment; highway vehicles on freight cars; and dual service vehicles.

The several types of equipment have been studied in actual operation and from drawings, descriptions and models, by members of the Commission and the Coordinator's staff. Information covering the development of such equipment abroad is available from the International Container Bureau, transport agencies, and in a recent publication of the U. S. Department of Commerce entitled, "Railway and Highway Transportation Abroad". Inventors were invited to submit their designs, which they did freely and in detail. Undoubtedly some equipment has not been included in the survey and report, but it is believed that all equipment which is being regularly operated or is in actual experimental operation has been included.

Station In connection with a survey made by Mr. F. J. Ginn, Class I carriers, in reply to an inquiry addressed to them, generally furnished information as to their methods in billing carload and less than carload traffic including that done by shippers; the rating, assessing and collecting of freight charges; station accounting, whether done at the station, in division or general offices, or in coordination with other accounting work; the physical handling of traffic; economics of station location, i.e., points at which stations should be located and station classification from the standpoint of duties, personnel and routines. Practices of recent adoption which were efficient and economical and those of longer use which were considered outstanding were featured and others under consideration which were believed to be advanced steps were brought out.

Waterway The survey of freight transportation by waterlines covered only domestic water carriers. Foreign commerce to or from the United States was excluded. Questionnaires were sent to all known operators of domestic water services, including inland waterway, coastwise, intercoastal, and Pacific Coast-Alaska routes. Replies were received from over 200 companies. With but a few exceptions, all important common carriers responded. Contract carriers and private operators did not reply in like number, but responses were received from the more important. The survey covered the equipment and physical property owned and used, routes and services, tonnage handled, revenues collected, expenses incurred, and financial results obtained.

Petroleum The survey of petroleum traffic is based upon a number of diverse sources. Among the principal sources are: The Report on Pipe Lines, prepared by Dr. W. M. W. Splawn, and published as House Report No. 2192, 72d Congress, 2d Session, 1933; the annual reports of pipe line companies reporting to the Interstate Commerce Commission; the statistical summaries of railroad and pipe lines prepared by the Bureau of Statistics of the Interstate Commerce Commission; the reports of the Bureau of Research, United States Shipping Board; the Commercial Statistics of Waterborne Commerce of the United States compiled and published by the Chief of Engineers of the United States Army; the reports of the Federal Oil Conservation Board to the President of the United States; the publications of the U. S. Department of Commerce, Bureau of Mines; the analysis of the returns of rail, water and pipe line companies and shippers to the questionnaires of the Federal Coordinator of Transportation; and statistical data with respect to the number of barrel miles of petroleum traffic transported by individual companies recorded by the companies in response to an inquiry of the Federal Coordinator of Transportation.

Highway It was not possible to obtain information covering highway freight operations in the same manner that was employed with respect to the railways, inasmuch as no truck operations are subject to Federal regulation or supervision. While the lack of similar information with respect to highway transportation leaves much to be desired, considerable data on highway freight operations were obtained through several sources. The information in each instance is a sample deemed to be sufficient to typify the several phases of highway transportation which have been covered. Information was obtained primarily from two inquiries, the first being addressed to motor truck operators throughout the United States. The replies from intercity common, contract and private operators, as well as city draymen, are summarized in exhibits 117 A1 to T of the Section's Merchandise Traffic Report. The second inquiry was addressed to firms included in the shipper's survey described herein.

A field survey was conducted at several of the largest cities, observing the performance of all principal operators in each terminal area with particular attention paid to different types of equipment and their use, such as burden carrying trucks, tractor semitrailer single units and multiple semitrailers, and demountable bodies employed in connection with trucks and with semitrailers. Every distinctive type of operation was investigated, and full operating cost and performance statistics were made available in most instances.

Highway truck operations were also studied by the Coordinator's Section of Research, primarily in connection with the questions of regulation and subsidy, but information with respect to operating costs of highway freight service was also developed and is included in this report.

The second study involved the analysis by the Section of Research of additional data furnished by the same operators in reply to the motor truck survey, weighted average values of all important elements of truck costs being developed for several vehicle gross weight groups, the group data plotted, and curves fitted. Equations expressing the relation of each cost element to gross weight resulted, which applied to highway vehicles of different capacities, produced the costs shown in analysis 75.6 A report on the results of this study was made by Mr. Warner Tufts of the Section of Research.

A comparison of the results obtained by these three studies shows them to be in substantial agreement. The highway costs used as the basis for conclusions in this report are shown in analysis 75.6, in which terminal costs closely approximate the results obtained in the terminal trucking study, while costs for "over-the-road" highway movements are in substantial harmony with the complete (arithmetical) average experience reported to the Coordinator by many individual highway operators and summarized in the Merchandise Traffic Report.

2. Objectives of The Surveys

Shipper The Shipper inquiry sought to obtain from the shippers: (1) A description of the agency through which they received their traffic information; (2) the nature of their contacts with carriers, operative and sales; (3) the considerations affecting the routing of traffic; (4) the reason for using truck transportation and the economies thereby realized; (5) the distribution of their carload traffic in shipments, tons and ton miles, among rail, water and highway carriers, separately for goods received, fuel received and goods shipped during 1933; (6) their cost, aggregate and per ton for packing, crating, demurrage, etc., loading and unloading vehicles, drayage, and side or industrial track service; and (7) comparisons of typical movements of their freight in lots of 5 tons or more by highway and rail, showing the haul, average load, comparable costs for transportation, packing and drayage, and the comparable speeds available by the two agencies

Railway The objectives of the rail carload inquiry were: (1) To compare existing rail prices with cost of providing the service and also with the cost to the shipper of providing his own transportation - a condition made possible by the recent development of highway, water and pipe line transport facilities; (2) to appraise carrier freight service in the light of the requirements of modern business and industry; and (3) to make available for use in budgeting, managerial control and supervision, operation, plant and service improvement, pricing, marketing and planning by both carrier managements and regulatory authorities, function, location and service unit costs and operative statistics.

Power The objectives of the Motive Power study were: (1) The development of light-weight, high-speed motive power rail units, capable of hauling demountable body equipment for highway tractor, truck and trailer units; (2) development of a motive power unit capable of a maximum speed of 60 miles per hour, propelled by one or more steam or internal combustion engines, the construction features to be modern, using all practical improvements commercially available; (3) to discover types of Diesel engines applicable to railway service; (4) to discover types of power transmission - electrical, mechanical or hydraulic - that would be most efficient for high-speed, light-weight branch and main line local freight service

Vehicle Any plan of coordinated freight transportation requires consideration of the physical means by which the cooperative effort will be accomplished. As long as each type of transportation agency is equipped to handle freight in equipment suitable only for its type of transportation, it is useless to look forward to coordinated service. On the other hand while the physical movement of freight by and between rail, highway and water carriers may be accomplished in a number of ways, still the coordinating instrumentality must produce a speedier service at a lower cost than now obtains, or the public will not be interested. The purpose of the study was to review the various devices that are urged as a means of coordinating transportation service, and to ascertain the principles which if followed will produce the most efficient transportation effort between the several types of carriers.

Station Because of the widely scattered area covered by the railroads of the United States, and the possibility that practices of value in use in one part of the country might not be adopted in other sections due to failure of the news to spread, a survey was undertaken to develop the methods in effect on all carriers covering certain designated features of freight station operation.

Waterway The objectives of the survey were to ascertain the serviceability of water transportation, to measure the degree of utility obtained, to appraise the needs for water services, and to determine the relative sphere in which water transportation was best adapted as a part of a coordinated national transportation system under present and potential conditions.

Petroleum The objectives of these several studies were diverse and reconciliations of the data were made wherever possible in order to appraise the place in transportation occupied by the transportation of petroleum and its products; to determine the volume and areas of production and consumption; the flow of the traffic; the profitability or unprofitability of the services of various types; the service demands of the traffic; the charges for the transportation service; and the relative utility of the several agencies engaged in the transportation of petroleum and its products.

Highway The objective in this study was to discover the extent of highway transportation in the movement of quantity (carload or truck load) shipments of freight, the cost of such transport, the service rendered, the areas in which trucks operate most efficiently, the degree of coordination now practiced with reasons for the lack of coordination, and the development of methods and devices for effecting coordination between rail, highway and water carriers, which will best serve the interests of all transportation agencies as well as the public.

3. Typicality of Data

General Base years were selected in each of the surveys, these being the latest statistical years for which information was available at the time the survey began. As a result, 1932 was the base year of the Rail Carload Traffic, Waterway Traffic, Petroleum Traffic surveys and of the Highway Operations, and the year 1933, of the Shipper survey.

With respect to the highway and shipper surveys, no data were available by which the typicality of the base year statistics could be gauged.

Shipper The response to the shipper inquiry was highly gratifying. Over 10,000 replies were received, of which over 7,000 were able to furnish data in the detail requested. Names, addresses and businesses of the firms cooperating are listed in the Appendix. They include 5,503 manufacturers, producers, printers or publishers, 1,021 distributors, wholesalers or brokers, 227 retailers, 41 chain store operators or mail order houses, 73 warehouses, and 426 public utility companies or miscellaneous types of businesses. Replies were received from every section of the country and covered all principal freight commodities. Judging by the rail tonnage reported by the shippers whose replies were received and summarized, they were responsible for over 35 percent of the rail traffic which moved in 1933.* In some businesses, in the case of some commodities, this percentage of coverage represented one half or more of the total movement. On the other hand, in the case of boats and marine equipment, musical instruments and supplies the returns were not sufficient to constitute a fair sample of the business.#

The average railway haul shown by the returns was 320 miles outbound and 351 miles inbound.ø The average of all rail shipments shown by the carriers was 353 miles.⌿ The average load per car of all shipments reported by shippers was 29 tons outbound, 27 tons inbound, 48 tons for inbound fuel, and 30 tons for all traffic.** The average reported by carriers for all rail shipments was 34.5 tons,## for fuel 51 tons,øø and exclusive of fuel, 26 tons.⌿⌿

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* See Factual Summary, section 6, Shipper. # Analysis 7.2.
ø Analysis 7.4. ⌿ Analysis 45.17.
** Analysis 38.1; total tons, rail, 232,000,000 divided by total shipments, rail 7,676,000 = 30 tons.
Analysis 45.17. øø Analysis 45.18.
⌿⌿ From exhibit 110 section 1, United States Aggregate, tons handled divided by cars handled.

Railway At the time the inquiry was promulgated, the latest full year for which rail operating revenues, expenses and statistics were available was 1932, and it therefore was chosen as the base year for the study. With few exceptions, to be noted hereinafter, the railways were asked to distribute traffic and expense statistics upon the basis of data and statistics of actual operations of the base year to the fullest possible extent, and where this could not be done, upon the basis of selected test periods.

The typicality of the base year was tested by relating the income, revenues, expenditures, traffic and service units of all years from 1922 to 1933 to those of the year 1932, and by expressing such relation as an index or percentage of the latter year.

The indices with respect to the extent of operations are shown in detail in analysis 3.1. Among the more important facts shown are (1) that train and car mileage in 1932 had not been reduced in the same degree that traffic had decreased; (2) that the ratio of empty to loaded haul and of gross to net ton miles was abnormally high in 1932; (3) that revenue traffic density in 1932 was about 60 percent below normal and rail service units about 40 percent below normal; (4) that train mile density in 1932 was about normal and car mile density about 8 percent below normal; and (5) that efficiency measured by the transportation of gross and net ton miles per train hour was higher in 1932 than in pre-depression years and lower than in 1931 and 1933.

Considering first freight revenue, we find that in 1932 it amounted to about 2,443 million dollars. This was lower than any year since 1920. Using it as a base (100) to which revenues of other years are related as indices, we find that the average annual freight revenue of the 12-year period was 166 percent of 1932, and that the year 1929 was about 97 percent greater than 1932.*

Turning to the traffic units which were responsible for these revenues, it appears that, related to the 236 billion net ton miles carried in 1932 as a base, the average annual ton mileage of the 12-year period was 160 percent; of 1930, 164 percent; 1929, 191 percent; and 1933, 107 percent.# Examining this ton mileage by commodity groups, we find that compared with 1932, the average annual ton mileage of the 12-year period of Rough Material was 285 percent (1934, 128 percent); of Raw Material, 157 percent (1934, 118 percent); of Semiprocessed Material, 210 percent (1934, 135 percent);

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* Analysis 3.2. # Analysis 3.1.

of Necessaries, 121 percent (1934, 114 percent); of Auxiliaries, 136 percent (1934, 109 percent); and of Accessories, 275 percent (1934, 190 percent).* Upon the whole, therefore, it appears that the volume of traffic handled in 1932 was between 60 and 80 percent of a normal traffic, as nearly as that condition can be appraised.

The cost of handling traffic in 1932 was almost exactly 2 billion dollars. The index of the average 12-year period was 166.# This means that because the carrier managements reduced their costs in exactly the same degree as their traffic fell - a remarkable achievement - the ton-mile unit cost in 1932 was exactly the same as it was in the 12-year period, and that insofar as the total unit cost is concerned, 1932 statistics are equivalent to those of a normal period. This is not true, however, if individual functions be considered. Thus, using the unit cost per equated ton mile of 1932 as a base, we find the average cost (over the 12-year period) of roadway maintenance to be 131 percent; of station maintenance, 146 percent; power maintenance, 120 percent; car maintenance, 107 percent; station agency, 103 percent; yard transportation, 107 percent; road transportation, 117 percent; traffic expense, 68 percent; general expenses, 74 percent: and taxes, 82 percent.ø

In the exigencies of the depression, carrier managements developed many improved methods of operation, the benefits of which will prove permanent. On the other hand, there is little doubt that some part of the reductions in costs, indicated by the foregoing indices, were made possible only by deferment of expenditures which in time must be made. The integrated effect of increased traffic, increased wages and materials, and the making good of deferred maintenance cannot be appraised at this time, and it follows that the same is true of the deflection of the reported unit costs from normal unit costs. The most that can be said is, that, on the whole, the average unit cost of all functions in 1932 did not differ substantially from the average of the 12-year period.

Station

Request for information as to station practices was addressed to all Class I railroads and 114 responses were received covering 147 carriers. In large part satisfactory information was furnished, the principal carriers generally submitting detailed reports covering every feature of station operation. The basic information, therefore, appears to be representative and reasonable.

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* Analysis 3.8. # Analysis 3.2.
ø Analyses 3.4, 3.5, 3.6.

Waterway

The floating equipment and physical property of water carriers were reported as of June 30, 1933, including the number of both self-propelled and non-propelled vessels owned, the number in operation, the number laid up, their average age, their average expected remaining life; their gross, net and dead weight tonnage and type; their original cost and current book value; and the book value of all other property owned or leased. Routes and services regularly operated as of June 30, 1933, and irregular or occasional services operated during the year 1932 and the first half of 1933, were reported. Tonnage carried and highest and lowest revenues per ton were reported for the five years 1928 through 1932. Detailed tonnage statistics by commodities and routes were reported for the year 1932. Comparative balance sheets, income statements and annual reports were submitted for the years 1928 through 1932. Revenue and detailed operating expense figures for 1932 were reported. While 1932 tonnage showed substantial decreases, as compared with the preceding four years, sufficient data were obtained in the way of capacity utilized, revenues, unit costs and other pertinent factors to use the 1932 figures and results obtained as basic.

The annual reports of the Chief of Engineers, United States Army, contain tonnage statistics of domestic water-borne traffic. These reports indicate a decline in total tons from 1928 to 1932 of 34 percent.* The reports of respondents showed a decrease in total tons handled by reporting companies from 1928 to 1932 of 52 percent.# The Army reports, included in both of the years, mentioned a very substantial tonnage of petroleum and petroleum products, amounting to 18 percent in 1928 and 30 percent in 1932 of total tonnage. This traffic is handled largely in privately owned vessels. Very few reports were received covering this particular traffic. In 1932, petroleum and its products accounted for only 1 percent of the tonnage handled by reporting companies.ø Eliminating from the Army reports crude petroleum and Auxiliaries which included petroleum products, the remaining tonnage shown on these Army reports indicated a decrease for 1932 as compared with 1928 of 51 percent.*

Petroleum

The survey was not limited to any particular year but data with respect to the movement of traffic were obtained for the same base year as that used in the Freight Traffic Report - 1932. Differences between conditions prevailing in that year, however, and those which prevailed in prior and succeeding years are pointed out and discussed whenever deemed of sufficient importance to materially affect the conclusions reached.

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* Analysis 7.7.
# See section 7, Factual Summary Waterway.
ø Exhibit 803.

II PROFITABILITY OF FREIGHT SERVICE

4. Freight Service Income

Waterway

The gross revenues of reporting companies for the year 1932 amounted to $148,700,000. The expenditures of these companies for the year 1932 amounted to $159,200,000 resulting in an operating loss of $10,500,000. In 1930 gross receipts were $209,900,000 and expenditures were $208,000,000 which yielded an operating profit of $1,900,000 or .9 percent. In 1928, gross revenues were $197,700,000, expenditures were $182,200,000, and in that year an operating profit of $15,500,000 or 8 percent was realized.*

The freight revenues, in 1932, of the companies who reported detailed statistics were $119,600,000. The total cost of their freight operations for 1932 were $131,500,000 resulting in a loss on freight service of $11,900,000.# Operating expenses for joint freight and passenger services were not segregated in detail in the reports as between these two services. Such expenditures were prorated on a revenue basis.

Petroleum

The financial results of the operation of the carriers engaged exclusively in the transportation of petroleum - the petroleum pipe lines - are generally quite favorable, although 8 companies reported deficits in operating income in 1932. As of December 31, 1932, the total investment of the 46 principal pipe line companies reporting to the Interstate Commerce Commission aggregated approximately 764 million dollars,ø of which 636 million dollars was invested in trunk pipe lines and 128 million dollars in gathering pipe lines.

These companies earned approximately 212 million dollars in total pipe line revenueø about 154 million dollars in trunk line revenue and 57 million dollars in gathering line income; and expended approximately 102 million dollars,≠ producing a ratio of operating expenses including taxes to operating income of approximately 48 percent.

The operating income of the petroleum pipe line companies, including the deficits of eight companies, aggregated approximately 110 million dollars in 1932.** This is equivalent to a return of over 14 percent on the total investment of approximately 764 million dollars, and a return of approximately 26

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* Report of Federal Coordinator of Transportation, 73d Congress, 2d Session, Senate Document 152, Appendix A.
# Analysis 4.1. ø Analysis 1.8.
≠ Analysis 3.9. ** Analysis 4.1.

percent upon the net investment of approximately 428 million dollars, which excludes accrued depreciation of 336 million dollars.*

No data are available to show the profitability of petroleum traffic to waterway carriers and since the overwhelming majority of this traffic is transported by petroleum companies which own and operate their own fleets and vessels either directly or through subsidiary companies, comparable data, if available, would be useless for comparative purposes.

The crude petroleum traffic originated by Class I railroads in 1932 amounted to 2,803,204 tons# or approximately .44 percent of the total originated traffic of Class I railroads which amounted to 646 million tons.ø If the petroleum products are included, the petroleum and products traffic of the Class I railroads amounts to approximately 7.7 percent of the total traffic originated.# The crude petroleum traffic in 1932 produced 8 1/2 million dollars or approximately .34 percent of the total freight revenue of Class I railroads which aggregated 2 1/2 billion dollars; and the combined crude and refined petroleum traffic produced 9.6 percent of the total freight revenue of Class I carriers.≠ Crude petroleum traffic with an average haul of approximately 403 miles in 1932 exceeded in distance the average haul of all railroad freight traffic - 353 miles.**

Crude petroleum traffic in 1932 was moved by pipe line an average distance of 382 miles, while refined petroleum oils were transported an average distance of 400 miles.##

5. Causes of Unprofitability

Waterway

It was clearly indicated that internal competition within the industry was largely responsible for the unsatisfactory financial results obtained. The total tonnage of reporting carriers in 1930 was about 6 percent less than in 1928. The gross receipts, however, were about 6 percent higher in 1930 than in 1928øø This was due to increases on certain long-haul routes, particularly intercoastal, and large decreases in tonnage on shorter haul routes, particularly the Mississippi River system and the Great Lakes.

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* Analysis 70.8. # Analysis 7.6. ø Analysis 3.1.
≠ I.C.C. Commodity Statistics, 1932.
** Analyses 45.17 and 45.18.
## Analysis 70.1 (ton miles divided by tons).
øø Report of Federal Coordinator of Transportation, 73d Congress, 2d Session, Senate Document 152, Appendix A, page 150 and 152.

In 1932, large decreases in both tonnage and receipts were reported. Practically all routes were overtonnaged even in 1928, and, in most cases, the average revenue per ton has undergone a noticeable decline during the period reviewed. Rate cutting within and without the industry has been prevalent. The tonnage handled in 1932 utilized only 38 percent of the vessel capacity of the reporting companies.*

III FREIGHT VOLUME

6. Aggregate Volume of Freight Traffic

General

There was not found available a statement showing the aggregate production and imports for 1932 or in previous years, in terms of a common unit of measure. Reference to the statistical abstract published by the Department of Commerce, however, made it possible to compile a statement of the tonnage by principal commodities for the years 1928 and 1932, using average or conventional conversion factors where such products or imports were stated in units other than tons. Products and imports, for brevity, are hereinafter called "products."#

Articles which move in freight transportation were grouped into six general commodity groups in accordance with the degree of processing to which they had been subjected: (1) The lowest grade of products, "Rough Material"; (2) materials of greater intrinsic value but wholly unprocessed, "Raw Material"; (3) "Semiprocessed Material"; (4) processed materials which are indispensable to human existence, "Necessaries"; (5) simple processed materials which are used as ingredients of complex processed materials, "Auxiliaries"; and (6) complex processed materials, for ultimate consumption, desirable but not indispensable, "Accessories."

American products in 1932 aggregated about 1,570 million tons, which was 67 percent of 2,330 million tons produced in 1928. A comparison of total tonnage of the six general commodity groups indicates a surprising consistency. The percentages of the total products for Rough Material (15 percent), Raw Material (61 percent), Semiprocessed Material (5 percent) and Auxiliaries (10 percent) were exactly the same in 1932 as they were in 1928. Necessaries were 5 percent in 1928 and 7 percent in 1932; and Accessories were 4 percent in 1928 and 2 percent in 1932.ø

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* Exhibit 805.
# Analysis 6.1 and Appendix.
ø Analysis 6.1.

These relative volumes of the several groups closely resemble those of the same groups in the rail traffic of 1932, in which Rough Material was 10 percent; Raw Material 63 percent; Semiprocessed Material 4 percent; Necessaries 5 percent; Auxiliaries 15 percent; and Accessories 3 percent.*

The reported tonnage summarized in the surveys, aggregating 759 million tons, is not the total carrier tonnage. To the rail tonnage of 631 million tons so summarized there must be added the l.c.l. tons of 16 millions, 33 million tons originated by Class II and Class III carriers and 11 million tons by electric railways, bringing the total rail tonnage to 691 million.# The pipe line tonnage reported of 83 million omits intrastate tonnage, which is estimated to have amounted to about 27 million tons in 1932. The tons reported by water carriers aggregated but 45 million tons,ø whereas the domestic tonnage shown in the Annual Report of the Chief Engineers of the United States Army was 272 million tons.⌿

The total rail, water and pipe tonnage in 1932 was, therefore, about 1,070 million tons. The difference between this amount and the total products of that year (1,570 million tons) was 500 million tons which, if it was transported at all, moved by highway.

This volume of tonnage unaccounted for was greater, both absolutely and relatively, than that which existed in 1928. The total products of the latter year aggregated 2,330 million tons. Since the carrier tonnage in that year amounted to 1,910 million tons**, the remainder of 420 million tons which did not move by rail, water or pipe line, either moved by highway or, which is more likely, was consumed locally. In 1932, however, with a decline of a third in the volume of products, this traffic which did not move by the carriers mentioned, had grown to 500 million tons - nearly a third of the total. Two assumptions are possible which roughly measure the maximum and minimum amount of this traffic which moved by highway. The first assumption is that local consumption declined at the same rate as general consumption in which case it was 280 million tons in 1932; the other is that it did not decline at all but remained constant at 420 million tons.

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* Analysis 45.17 et seq.
# I.C.C. Statistics.
ø Analysis 7.1.
⌿ Probably not more than 214 million tons was intercity traffic. See section 7, Factual Summary, Waterway.
** Steam railways 1,371 million tons and electric railways 22 million tons (from I.C.C. Statistics); water 412 million tons (analysis 7.7); pipe, including intrastate movement, 105 million tons, (analysis 7.6 plus 27 million tons estimated intrastate movement).

The first assumption produces highway tonnage in 1932 of 220 million tons; the second the minimum, 80 million tons. In the first case the older carriers have lost to highway about 17 percent of the traffic formerly handled by them; in the latter case about 7 percent. The true loss probably lies nearer the former than the latter.

In the United States there was a great growth of population until 1900. The excess of births over deaths was large. Immigration from Europe 1870 to 1910 was large. The growth of population from 1900 to 1922 was much slower and there was less excess of births over deaths. There was practically no immigration from 1914 to 1919, not much immigration from 1922 to 1930 and none since 1930.

Students of population growth do not expect much increase in excess of births over deaths or much growth in the number of immigrants in the United States during the next 25 years. Most students of population believe that the population in the United States will be practically stationary after 1960.

From 1835 to 1895 there was always expansion westward. Now there is little expectation of migration westward during the next 20 or 30 years. For a long time the railroads were the only carriers in the United States, except in certain spots where water was available. For the last 15 years highway transportation has been growing very rapidly. By 1929 highway transportation had an investment (including highway and vehicles) equal to that in the railroads. There was great growth in railroad and highway facilities from 1920 to 1930, at a time when the growth of population was very materially slowing down. The result is an excess of transportation facilities. The foreign markets for United States products are now relatively small and it is probable that these markets will continue to be small for a number of years to come.

Shipper

To reduce to a minimum the amount of work entailed in answering the inquiry and at the same time to approximate the commodity distribution, the shippers were asked to classify their business in accordance with 40 business classifications. Within reasonable limits it has been possible to reconcile this business classification with the several statistical commodity classifications, with respect to the outbound shipments. Whenever a commodity (except inbound) is mentioned in connection with the shipper, what is meant is a business group in which that commodity is the principal thing sold.

The inbound and outbound traffic generally is shown separately. The ratio of outbound rail tonnage reported by shippers to total rail tonnage originated is 20 3/4 percent.*

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* Analyses 7.2 and 45.17.

Deducting this percentage from the inbound tonnage as representing duplication and adding the remainder to the outbound tonnage reported indicates unduplicated tonnage of over 211 thousand tons. This is nearly 35 percent of the total rail carlot tonnage of 1932. A similar calculation with respect to water tonnage indicates unduplicated tonnage reported of 37 million tons or 18 percent of the total water-borne intercity traffic reported by the Chief of Engineers, United States Army.

The total volume of outbound tonnage reported was 161 million tons, inbound 129 million tons, making a grand total tonnage reported of 290 million tons. Of this total, 12 million tons were reported by businesses dealing in Rough Material, 67 million tons by those dealing in Raw Material (of which 45 million were coal and coke), 13 million tons by those dealing in Semiprocessed Material (principally paper), 51 million tons by those dealing in Necessaries (of which 18 million tons were by cereal businesses), 98 million tons by those dealing in Auxiliaries traffic, and 49 million tons by those dealing in Accessories traffic.*

Petroleum

Prior to 1875 the annual production of crude petroleum in the United States was approximately 5 million barrels of 42 U. S. standard gallons per year. In 1876 the annual production was less than 9 million barrels but rose to over 54 million barrels in 1891, and to over 100 million barrels per year in 1903. Between 1903 and 1916 the annual production rose steadily, year by year, until it reached in excess of 300 million barrels in the latter year. The incentives to production due to the World War, the rapid increase in the number of automobiles and motor trucks, the increased use of petroleum for vessel fuel and in industry and the use of petroleum for the heating of buildings caused the production of petroleum to increase from approximately 300 million barrels in 1916, to the peak of production of slightly over a billion barrels in 1929. Since 1929 the decreased demand for petroleum, due to business stagnation and the attempts to regulate and control the production of petroleum by State and Federal authorities, has resulted in decreased annual production to 785 million barrels in 1932.#

The present production is estimated by geologists to be approximately 46 percent of the potential capacity of the wells in production, if operated to full capacity.

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* Analysis 7.2.

# Source: Bureau of Mines, Department of the Interior, U. S. Government.

The possibility of the exhaustion of petroleum resources is one that should not be ignored. From time to time geologists have made estimates of the total petroleum reserve of the United States which have been proven to be inaccurate prophecies, due to the discovery and development of new fields and to the improvements in technique, in location, drilling, and recovery, and in improved methods of conservation and controlling production.

It has been estimated that 43 percent of the area in the United States is barren of petroleum resources and of the remaining 57 percent of the area only a small percentage is considered as promising petroleum production territory. The petroleum producing areas are scattered over wide expanses of territory causing uncertainty with respect to the location of the possibility of new areas of production and as to the extent and location of the transportation facilities needed to handle the traffic.

7. Distribution of Traffic Among Carriers

General

The conclusion stated in The Report with respect to the distribution of traffic among carriers is confirmed by the returns to the shipper questionnaire which, with respect to the total tons of carload freight, was shown in section 6 supra to indicate a rail sample of nearly 35 percent and a water sample of nearly 18 percent.

The average rail haul per ton originated in the United States as a whole in 1932 was 353 miles.* The shippers indicated an average haul by water of about 1,000# miles and by highway of 100 miles.ø The water survey indicated that water routes averaged about 25 percent longer than were necessary to provide the same service by rail, which would reduce the average haul to the equivalent of 750 rail miles. The average pipe line haul was 380 miles.⌿ Weighting the percentage of the tons originated, as shown in section 7 of The Report, for these differences in haul, the rail proportion becomes 48 percent, the water 40 percent, pipe line 8 percent, and the highway 4 percent, respectively, of the total ton miles.

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* Analysis 45.17.

# Waterway survey indicated 1,100 miles. The reduction to rail mileage is for the purpose of obtaining a common basis for comparison.

ø Analysis 7.4.

⌿ Analysis 70.1.

From the foregoing it would appear that, from a tonnage standpoint, carriers other than highway operators have lost approximately 15 percent of the traffic which they formerly handled. From a revenue standpoint, this loss appears to be between 15 and 20 percent.* Assuming that the production of 1928 is one which may be normally expected over the period of the immediate future, the railways can receive revenues only about 85 percent as great as those which were received in 1928.# This would mean about the same revenues as were received either in 1930 or in the average of the 12-year period.ø The foregoing conclusion rests upon the assumption that the present relative attractiveness of the four types of freight transportation, rail, water, pipe line and highway, will not be changed materially, either from a service or a price standpoint.

In the case of the railways 85 percent of the 1928 freight revenues amounts to about 4 billion dollars - the revenues over the average 12-year period and in 1930. These revenues over the 12-year period and in 1930 produced a net return of 900 and 1,000 million dollars, respectively,ø or about equal to a 5 percent return upon the freight investment of approximately 18 billion dollars. The foregoing does not take into consideration the passenger investment of about 7 billion dollars or the passenger operating deficit which in 1933 amounted to 200 million dollars.⌿

Shipper

Of the outbound tonnage reported by shippers 82 percent moved by rail, 6 percent by highway and 12 percent by water.** Of the outbound ton miles, 69 percent moved by rail, 2 percent by highway, and 29 percent by water.## Of the inbound tonnage, other than fuel, 77 percent moved by rail, 6 percent by highway, and 17 percent by water. Of the inbound ton miles, 58 percent moved by rail, 2 percent by highway, and 40 percent by water. Of the inbound fuel tonnage, 78 percent moved by rail, 3 percent by highway, and 19 percent by water; and of the ton miles, 76 percent moved by rail, 1 percent by highway, and 23 percent by water. Outbound commodities of which the tonnage moving by highway was 15 percent or greater were: Paints, 44 percent; beverages and liquors, 42 percent; automobiles and parts, 39 percent; groceries, 37 percent; rubber articles and tires, 33 percent; live stock, 32 percent; dry goods and clothing, 24 percent; bakery goods, 20 percent; canned goods, leather goods, fresh fruits and vegetables, each 18 percent; books, stationery and paper, each 17 percent; cotton in bales, 16 percent; and textiles, 15 percent. Inbound those 15 percent or greater were: Live stock, 62 percent; canned goods, 38 percent; boots and shoes, 31 percent; cooperage material, 27 percent; cotton in bales, 25 percent; fresh fruits and vegetables, and vegetable oil, meal and cake, each 22 percent; bakery goods, 19 percent; automobile parts, 18 percent; sand, stone and gravel, and groceries, each 17 percent; rough lumber, 15 percent.* There were only five businesses in which the outbound highway ton miles exceeded 10 percent: Rubber articles and groceries, each 19 percent; paints, 16 percent; beverages and liquors, 13 percent; automobiles and parts, 12 percent; and only two cases where the inbound highway ton miles exceeded 10 percent: Livestock, 19 percent; and cotton in bales, 12 percent.#

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* The loss in revenue follows closely the loss in tonnage rather than ton miles, due to the large volume of higher rated commodities carried and the short average haul for highway movements.

# This estimate, if anything, is too optimistic. It does not evaluate sufficiently the effect which the substitution of fuels or power not requiring transportation, or the growing tendency of industry to relocate, to reduce or eliminate transportation.

ø Analysis 3.2.

⌿ Passenger Traffic Report, Federal Coordinator of Transportation.

** Analysis 7.2.

## Analysis 7.3.

The rail average haul of inbound commodities was 351 miles, outbound 320 miles; water inbound 1,026 miles, outbound 999 miles; highway inbound, 116 miles, outbound 99 miles. The commodity having the longest average highway haul was fresh fruits and vegetables, 435 miles. Other outbound hauls in excess of 200 miles were packing house products, groceries, structural iron and steel, rubber articles, plumbing and heating materials, books and periodicals, department store materials, tobacco. Inbound hauls averaging more than 200 miles were reported for the following groups: Rough lumber, fuel. beverages, groceries, rubber.ø

The foregoing rail and highway traffic consists of carloads. As shown in the Coordinator's Merchandise Traffic Report, shippers reported l.c.l. data which indicated a movement of 40 million tons of merchandise by highway. Using the average haul of all carload highway traffic (100 miles) produces 4 billion additional highway l.c.l. ton miles.

Railway Rail freight tonnage of carload traffic in 1932 aggregated 631 million tons. The tonnage index of the average 12-year period was 172 compared with its ton-mile index of 160.⌿ The difference is due to the different distribution of commodities, rather than to a

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* Analysis 7.2.
# Analysis 7.3.
ø Analysis 7.4.
⌿ Analyses 3.7 and 3.8.

lengthening haul, since it was found that applying the average haul of individual commodities in 1932 to the tonnage of each commodity in each of the preceding twelve years, produced substantially the average haul of all commodities reported by the carriers for that year, indicating that the average haul of the individual commodities in 1932 was the same as that of its preceding years.

In the average year, Rough Material constituted 15 percent of the total tons, in 1932, 10 percent; Raw Material constituted 60 percent in the average year and 63 percent in 1932; Semiprocessed Material, 5 percent in the average year and 4 percent in 1932; Necessaries, 4 percent in the average year and 5 percent in 1932; Auxiliaries, 12 percent in the average year and 15 percent in 1932; and Accessories, 4 percent in the average year and 3 percent in 1932.*

Rough Material constituted 5 percent of the aggregate ton miles in the average year and 2 percent in 1932; Raw Material, 63 percent in the average year and 64 percent in 1932; Semiprocessed Material, 5 percent in the average year and 4 percent in 1932; Necessaries, 8 percent in the average year and 11 percent in 1932; Auxiliaries, 13 percent in the average year and 16 percent in 1932; and Accessories, 6 percent in the average year and 3 percent in 1932.*

Waterway The domestic waterline freight traffic of reporting companies in 1932 amounted to 48 million tons. This was slightly less than one half of the tonnage handled by these carriers in 1928, in which year they handled 98 million tons. In 1929, the volume had increased to 106 million tons; in 1930, it declined to 93 million tons; and in 1931, it had decreased further to 70 million tons. The depression, of course, adversely affected the available volume of traffic. Of the 50 million tons decrease in 1932, as compared to 1928, 44 million tons were represented by falling off in business in the Great Lakes district where the principal commodities handled by water are coal, grain, ore, sand, stone and gravel.#

The annual reports of the Chief of Engineers, United States Army, for the year 1932 shows a total of 272 million tons of domestic water-borne traffic.ø The total tonnage of reporting companies for the year 1932 amounted to 48 million tons. Ton miles were reported by the Chief of Engineers, United States Army, for freight carried on the inland rivers and lakes of the United States but not for coastwise or intercoastal traffic. Treating only districts for which comparable figures were available, the Army reports indicated a ton-mile movement on the Mississippi River and Great Lakes systems of 30 billion ton miles, while reporting carriers operating in these districts performed a service of 18 billion ton miles.* The Army tonnage figures are approximately 5 1/2 times those of reporting companies, but the Army ton-mile figures are only 1 2/3 times the ton-mile figures of reporting companies. It is evident that the Army figures include a very large proportion of short-haul traffic frequently between separate municipalities located on extensive harbor waters, such as New York Harbor district, San Francisco Bay, and Puget Sound. The amount of such tonnage which could be definitely earmarked from the Army report was 58 million tons. There was also included in the report of the Chief of Engineers an item of 8 1/2 million tons of floated and rafted timber. This leaves 214 million tons of intercity water-borne traffic as reported by the Chief of Engineers, United States Army.

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* Analyses 3.7 and 3.8.
# Report of Federal Coordinator of Transportation, 73rd Congress, 2nd Session, Senate Document 152, Appendix A, Table II.
ø Analysis 7.7.

The Army report included 82 million tons of petroleum and petroleum products. Respondents reported only 497 thousand tons of these commodities. Coal and coke were shown in the Army report as 73 million tons; and sand, stone and gravel as 33 million tons, while the tonnage of reporting companies for these commodities was 18 million and 3 million tons respectively.# Making allowance for the known local or intraport traffic, the floated tonnage, and making adjustments for the discrepancies between tons reported by respondents and the annual report of the Chief of Engineers, United States Army, for the above mentioned commodities only, the revised figure for the Army report becomes 78 million tons as against 48 million tons for reporting companies, verifying within a close degree of accuracy the 1 2/3 ratio indicated by the ton-mile statistics. The tonnage reported and used in the survey constituted at least 60 percent of the 1932 intercity water-borne traffic; excluding petroleum; coal and coke; and sand, stone and gravel.

The nature of the commodities which seek waterway transportation and the flows of traffic available have developed distinct types of waterway freight transportation services. Common carrier operators generally service definite routes on fairly well established schedules. Large movements, particularly of bulk commodities, are ordinarily handled in cargo lots by contract carriers. Large producers, in some instances, either operate their own vessels or have established subsidiary companies to transport their own tonnage. Such operations are commonly classified as private carriers. There is no absolute line of demarcation, however, between these three different classes of operators. Private carriers frequently act as contract carriers and often as common

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* Analysis 49.4.
# Analysis 7.7 and exhibit 803.

carriers. Contract carriers sometimes operate as common carriers in one direction or over part of their routes, and common carriers in some cases handle tonnage on a contract basis. In most instances, the reporting carriers could be definitely allocated to one of these three classes of service in which the great preponderance of their operations occurred. In 1932, reporting common carriers handled 19 million tons, contract carriers 20 million tons, and private operators 8 million tons.* These figures for reporting companies do not truly reflect the actual tonnage distribution between classes of carriers. As stated before responses were received from almost all important common carriers, but contract and private carriers did not reply in anywhere near the same proportion. It was clearly indicated that common carriers as a class handled not more than 10 percent of the total water-borne traffic.

The common carriers were obligated generally to maintain regular and dependable schedules and in 1932 utilized only 28 percent of their vessel capacity. The contract carriers, with a slackening in tonnage offered, could more easily adjust their movements and operated in 1932 at 73 percent of capacity. The producers, who had acquired vessels primarily to move their own products, could not so readily afford to lay up their own vessels and purchase transportation in the open market. They did not in all cases observe the same degree of regularity of schedules as the common carriers, and the result was that the operation of these private carriers was at 35 percent capacity.#

Petroleum In 1932 of a total estimated movement of 711,000,000 barrels of crude petroleum, approximately 71.5 percent was transported by pipe lines; about 26 percent was moved by coastwise, intercoastal and inland waterway carriers; and about 2.5 percent was hauled by Class I railroads. The remainder of the crude petroleum production was distributed among intrastate pipe lines, Class II and III carriers and motor trucks.ø

The total petroleum products transported in the United States in 1932 amounted to approximately 744,000,000 barrels. Of this amount the water carriers originated 382,000,000 barrels or 51 percent of the total traffic; the Class I railways originated approximately 337,000,000 barrels or 45 percent of the total, and the interstate pipe lines originated about 24,900,000 barrels or 3.3 percent. The remainder of the refined petroleum produced was moved by intrastate petroleum pipe lines, Class II or III railway carriers, or by motor trucks./

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* Analysis 70.1. # Exhibit 805.
ø Analysis 7.6 (6.435 barrels crude petroleum = 1 ton).
/ Analysis 7.6 (7.215 barrels gasoline = 1 ton).

IV FREIGHT TRAFFIC MARKETS

8. Territorial Freight Traffic Markets

Railway

Out of a total of 631 million tons originated in 1932, New England Carriers originated 2 percent and terminated 5 percent of rail carload freight traffic; Central East Carriers originated 42 percent and terminated 47 percent; Pocahontas Carriers originated 12 percent and terminated 6 percent; Southeast Carriers originated 13 percent and terminated 11 percent; Northwest Carriers originated 14 percent and terminated 16 percent; and Southwest Carriers originated 17 percent and terminated 15 percent.*

Carriers in the Eastern District originated 25 percent of the Rough Material, 52 percent of the coal, 25 percent of other Raw Material, 52 percent of Semiprocessed Material, 34 percent of Necessaries, 52 percent of Auxiliaries, and 81 percent of Accessories. They terminated 27 percent of Rough Materials, 65 percent of coal, 36 percent of other Raw Material, 55 percent of Semiprocessed Material, 49 percent of Necessaries, 51 percent of Auxiliaries, and 72 percent of Accessories.*

Southern District Carriers originated 20 percent of Rough Material, 37 percent of coal, 15 percent of other Raw Material, 15 percent of Semiprocessed Material, 11 percent of Necessaries, 12 percent of Auxiliaries, and 7 percent of Accessories. They terminated 18 percent of Rough Material, 20 percent of coal, 15 percent of other Raw Material, 15 percent of Semiprocessed Material, 14 percent of Necessaries, 13 percent of Auxiliaries and 7 percent of Accessories.*

Western Carriers originated 54 percent of Rough Material, 11 percent of coal, 56 percent of other Raw Material, 33 percent of Semiprocessed Material, 55 percent of Necessaries, 36 percent of Auxiliaries, and 12 percent of Accessories. They terminated 55 percent of Rough Material, 15 percent of coal, 49 percent of Raw Material, 30 percent of Semiprocessed Material, 37 percent of Necessaries, 36 percent of Auxiliaries and 20 percent of Accessories.*

Waterway

The United States being bounded on the east by the Atlantic Ocean, on the west by the Pacific Ocean, and having as a part of its northerly border the Great Lakes and on the easterly half of its southern border the Gulf of Mexico, is well supplied with natural, deep-water trade routes. Navigable rivers such as the Hudson, Delaware and Columbia have been supplemented by canals such as the Panama, New York State Barge and Welland, and improved waterway projects, particularly on the Mississippi, Ohio, Illinois and Warrior Rivers, have produced an extensive system of inland waterway routes. Most of the large cities are located on and a large part of the population resides along or closely adjacent to existing waterway routes. For the purpose of analysis, waterline operations have been grouped according to the geographic districts within or between which they were conducted. These major groups are Atlantic Coastwise and Inland, Atlantic Gulf, Intercoastal, Inland Waterways-Mississippi System, Great Lakes System, and Pacific Coast and Inland. All operators who reported were assigned to one of these groups, and in cases where a carrier operated in more than one of these districts, its activities were prorated to the respective districts in accordance with the details shown in his return. In 1932, of the reported tonnage, 25 million tons were handled in the Great Lakes district, 7 million tons on the Inland Waterways-Mississippi System, 5 million tons Atlantic Coastwise and Inland, 4 million tons Intercoastal, 3 million tons Pacific Coastwise and Inland, and 3 million tons in the Atlantic Gulf Service.*

Petroleum

The principal petroleum producing regions of the United States are: (1) the Midcontinent district, including portions of the States of Texas, Oklahoma, Kansas, Louisiana, Arkansas, New Mexico and Missouri; (2) the California district, including producing wells in the State of California; (3) the Gulf Coast district, including portions of Texas and Louisiana adjacent to the Gulf of Mexico; (4) the Appalachian district, including the western portion of the States of New York, Pennsylvania, West Virginia, eastern portions of Ohio, Northern Kentucky and Tennessee; (5) the Rocky Mountain district, including Wyoming, Montana, Colorado, Utah, Northern New Mexico and Alaska; (6) the Lima-Indiana district, including western Ohio, Indiana and Michigan; (7) the Illinois-Indiana district, including parts of southwestern Indiana and southeastern Illinois.

The production of crude petroleum in 1932 was distributed among these major producing areas as follows: Midcontinent district, 493,034,000 barrels or 63 percent; California district, 178,128,000 barrels, or 22 percent; Gulf Coast district, 53,466 barrels, or 7 percent; Appalachian district 29,667,000 barrels, or 4 percent; Rocky Mountain district, 17,410,000 barrels, or 2 percent; Lima-Indiana district 8,004,000 barrels, or 1 percent; and Illinois-Indiana district, 5,450,000 barrels, or nearly 1 percent.#

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* Analysis 8.2.

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* Report of Federal Coordinator of Transportation, 73d Congress, 2d Session, Senate Document 152, Appendix A, Table II.

# Analysis 8.3 - Source, Bureau of Mines, U. S. Department of Commerce.

Three States produced 82 percent of the total crude petroleum production of 1932 - Texas 40 percent, California 23 percent and Oklahoma 19 percent. Six States produced 12 percent of the total production - Kansas, including Missouri, produced 4.4 percent, Louisiana 2.8 percent, Wyoming 1.7 percent, Pennsylvania 1.6 percent, and Arkansas 1.5 percent.*

9. Freight Traffic Terminal District Markets

Railway

For the purpose of localizing in some degree carrier traffic (and costs), all carrier stations were grouped into terminal districts. These districts were of three classes. Metropolitan terminal districts# were individual terminal areas. They consisted of the 86 largest cities in the country (each with more than 100 thousand inhabitants) together with the entire area, rural and urban, including in some cases other cities, embraced within the railway terminal operating areas within which the city was located.

A major terminal area is defined as a common switching area (other than a metropolitan area) where one or more switch crews were employed by a respondent carrier during the greater part of the year 1932. All such areas in each of the nine rate territories were grouped into a single "major terminal district" for that territory.

A minor terminal area is defined as a station at which the respondent carrier collected or delivered freight during 1932, chiefly without the employment of switch engines, and hence by means of way freight train service. All such stations in each of the nine rate territories were grouped into a single "minor terminal district" for that territory. Since classification between major and minor districts depended on the use of switch engines and not the station, there are cases where a station is in a major group on one railway and in a minor group on another. Eliminating duplication as far as possible, there were in the United States in 1932, 86 metropolitan terminal districts, 1,431 major terminal areas and 32,704 minor stations.

Of all carload traffic in 1932, approximately 22 percent originated and 46 percent terminated in the 86 metropolitan terminals; 27 percent originated and 26 percent terminated in the 1,431 major terminals where switch engines were employed; and 51 percent originated and 28 percent terminated at the minor stations.ø

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* Analysis 8.3.

# These metropolitan terminal districts are listed by name in analyses 9.4 to 9.7, inclusive.

ø Computed from analyses 9.1, 105.4 and 105.5.

These general percentages, insofar as cars terminated are concerned (data not available for cars originated), were consistent throughout the commodity groups with the following principal exceptions: Metropolitan areas consumed 46 percent of total cars; but 76 percent of perishables; 63 percent of paper and its products; 75 percent of edible animal products; only 29 percent of petroleum products; 33 percent of building material; but 64 percent of appliances, machinery, automobiles, etc. Major terminal districts consumed 26 percent of the total; but only 16 percent of perishables; 19 percent each of edible animal products and of appliances, etc. Minor stations consumed 28 percent of the total; only 8 percent of perishables; 14 percent of paper products; 6 percent of edible animal products; and 18 percent of appliances, etc.*

Due to the inclusion of water and export traffic, the cars which are terminated in a given district do not always exactly measure the goods consumed (or processed) in that district, although for all practical purposes they are so treated. In 1932, 46 percent of rail traffic was consumed (in the sense above used) in 86 metropolitan cities, and 25 percent in 11 such cities. In the order of their consumption, these cities were: New York, 6 percent; Chicago, 5 1/2 percent; Philadelphia, 2 percent; Norfolk, 2 percent; Detroit, 1 3/5 percent; Toledo, 1 1/2 percent; St. Louis, 1 1/2 percent; Minneapolis-St.Paul, 1 2/5 percent; Kansas City, 1 2/5 percent; Cleveland, 1 2/5 percent; and Boston 1 percent. If Norfolk and Toledo are to be omitted for the reason that coal for water transshipment comprises the bulk of their terminations (84 and 80 percent respectively), then four additional cities, Pittsburgh, 1 percent; Baltimore, 1 percent; Buffalo, 9/10 percent; and Cincinnati, 4/5 percent; must be added to bring the total to 25 percent. New York City alone terminated 6 percent of all Raw Material, 6 1/2 percent of Semiprocessed Material, 7 1/2 percent of Necessaries, 5 percent of Auxiliaries, and 10 percent of Accessories. New York City terminated more cars of coal, perishables, Semiprocessed Material, Necessaries, Auxiliaries, and Accessories traffic than any other city; Chicago, more live animals, bulk grain, petroleum products, Rough Material, than any other city; and Houston, more cotton.*

Waterway

The largest volume of water-borne traffic in 1932 originated in the coal fields of Pennsylvania, Ohio, West Virginia, Kentucky, Indiana and Illinois and moved by rail to southern Great Lake ports and thence to the Northwest, also over the Inland Waterway-

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* Analysis 9.1.

Mississippi System (Ohio and its tributaries and Warrior), and by rail to middle Atlantic ports and thence to Atlantic Seaboard territory. The second largest volume consisted of grain and grain products which originated in the northwest, and moved east from Lake Superior and Lake Michigan ports. Other major producing areas of water-borne traffic are the North Atlantic States which originate large quantities of miscellaneous manufactured articles for movement coastwise, to the Southwest via the Gulf, and to the Pacific Coast via intercoastal service; the Pacific States which produce forest products, petroleum, canned goods and sugar for movement to the East; and the Gulf States producing sugar, cotton, sulphur, phosphate rock, rice, petroleum, and naval stores for movement north by river and east by Atlantic Gulf lines.

Petroleum

The refining of petroleum is carried on principally in 21 States with the production of 8 other States included in the production figures of 6 of these 21 States. Of the 820,000,000 barrels of petroleum run to stills in 1932, approximately 44 percent of the total was accounted for by two States: Texas 24 percent and California 20 percent. Four other States produced nearly 30 percent of the total: Pennsylvania, 9 percent, New Jersey 8 percent, Indiana 6 percent and Oklahoma 6 percent. Eight other States, including the production of six additional States, produced 23 percent of the total: Louisiana 6 percent, Kansas, including Missouri, 4 percent, Illinois 4 percent, Ohio 3 percent, Georgia, including Maryland, South Carolina and Virginia, 2 percent, Massachusetts, including Rhode Island, 2 percent, New York 1 percent and Wyoming, including Nebraska, 1 percent. No other State produced more than 1 percent of the total production and the balance of the total run to stills amounting to 3 percent is distributed among seven States, including the productions of two additional States.*

The total petroleum refinery capacity of the 372 refineries of the United States, as of January 1, 1933, amounted to 3 1/2 million barrels daily or 1 1/4 billion barrels per year. Two States had 45 percent of the total refinery capacity: California 23 percent, and Texas 22 percent. Four other States 28 percent; Oklahoma 8 percent, New Jersey 7 percent, Pennsylvania 7 percent and Indiana 6 percent. Nine other States 22 percent: Louisiana 5, Kansas 4, Illinois 4, Ohio 3, Maryland 2, Massachusetts, Wyoming, New York and Arkansas each 1 percent. The remaining 51 percent of the refining capacity is divided among 12 other States.*

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* Analyses 8.5, 8.6, 8.7. Source, Bureau of Mines, U. S. Department of Commerce.

The principal refining centers, i.e., those having a daily capacity of 100,000 barrels or over, are located in the Baton Rouge, Louisiana, District; the Chicago, Illinois, Port District; the Houston, Texas, Port District; the Los Angeles, California, Basin District; the New York-Newark Bay District; the Philadelphia, Pennsylvania, Port District; the Port Arthur-Beaumont-Texas City District, Texas; and the San Francisco Bay District in California.

Refineries having aggregate daily capacity of between 10,000 and 100,000 barrels daily are found in 53 other districts in the United States.

One hundred and thirty-three refineries were shut down as of January 1, 1933 in all districts as compared to 372 refineries in operation, but 18 new refineries were being built.

The total number of refineries in operation, shut down and in the process of being built in the United States as of January 1, 1933, amounted to 523 refineries with a daily operating capacity of 3,921,000 barrels.*

10. Trade Area Freight Traffic Markets

Railway

The International Magazine Company, after a study of a number of years, was able to divide the continental United States into 701 trade areas from market, industrial and transportation accessibility standpoints. Each of these areas consists of a territory, urban and rural, which generally trades at a common market town or trade center. These areas also have been used by the Bureau of Census, the National Recovery Administration and other governmental bureaus to supplement the information shown in the surveys of the Magazine Company.

The transportation service and traffic of the railways in 1932 have been classified for the purposes of this report with relation to these 701 trade centers.

In analyses 10.1 to 10.15, inclusive, the rail traffic originated and terminated in the United States in 1932 has been grouped in accordance with 701 trade areas. Embraced within these areas are 34,221 cities, towns and villages. These areas embraced the total population of the continental United States in 1930. Of the total population, 42 percent was rural and 58 percent urban, of which 72 percent was represented by the population of the trade center. There were 186 thousand industries served by track, of which 43 percent were located in the trade center. Of the total cars in 1932, 52 percent originated and 66 percent terminated in the trade centers in the United States.

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* Analysis 8.4.

Maps and detailed summaries of the trade areas showing trade centers and all other towns and villages served by railways are included in the Appendices, each of which has been given a code number locating it geographically and also the trade area in which it is situated.

V FREIGHT COMMERCE

11. Factors of Freight Commerce

Railway The flow of freight as shown herein is gauged largely by the results of the rail carrier survey. Of necessity it was limited in many respects to the flow as evidenced by intercarrier as distinct from local carrier traffic, because no data were available showing origin and destination other than the interchange between carriers at junctions. Owing to this the interterritorial traffic is understated since it embraces only that part of such traffic which requires the services of two carriers. Any interterritorial traffic which was handled by a single carrier could not be separated from intraterritorial traffic. It is impossible to measure the amount of this traffic.

12. Local Commerce

Railway Traffic which is handled by a single carrier is relatively less important in amount than formerly, or than intercarrier traffic. In the United States, as a whole, for 1932, the car miles of such traffic constituted but 23 percent, the ton miles but 26 percent, and the revenue but 31 percent, respectively, of the car miles, ton miles and revenue of all traffic. The relative importance of the local traffic of principal commodity groups is shown in analysis 12.1.

Waterway Water traffic may be divided into strictly port-to-port business and business interchanged with other carriers at either one end of the water movement or both. The Atlantic Coastwise business was reported as about 50 percent interchanged with railroads while Atlantic Coast Inland carriers interchanged about 2/3 of their traffic with railroads. The Inland-Mississippi system lines reported more than 1/2 of their tonnage, Great Lakes common carriers about 5/6 of their traffic, Pacific Coastwise common carriers less than 1/10 and Pacific Coast Inland carriers 1/3 of their tonnage as interchanged with railroads.*

The reports of the other carriers in some cases were indefinite and in others included duplications, so that actual percentages could not be determined. A study of the commodities handled and of the production and consumption areas, however, indicates that not more than 1/3 and probably considerably less of the water-borne tonnage was strictly port-to-port or local traffic.

13. Intercarrier Commerce

Railway Traffic which is common to two or more carriers is responsible for 77 percent of the carload car miles and produces 69 percent of the rail carrier revenue. Of the total carloads originated, 51 percent are interchanged an average of over 2 2/3 times each. Commodity distributions of interline traffic, originated and handled intermediately, are shown respectively in analyses 12.1 and 13.1.

Waterway At least 50 percent of water-borne tonnage received a rail haul at either one end or both ends of the water movement. Detailed figures as to the amount of traffic which involved a second water carrier or intercity highway movement were not furnished, but that amount was indicated to be considerable.

14. Intraterritorial Commerce

Railway For convenience in examination, carrier returns showing interchange of cars have been separated into two classes, intraterritorial and interterritorial. Intraterritorial is taken to be the equivalent of interchange between two carriers, each of which serves the same territory. This is not strictly true for (a) one or both carriers may serve more than one territory; (b) the car may be passing intermediately, later to be interchanged interterritorially; or (c) carrier lines so overlap that what appears to be an interterritorial interchange from a carrier standpoint is an intraterritorial interchange geographically.

Of the total cars interchanged (31 million), 23 million were intraterritorial, of which 800 thousand were between carriers at New England Junctions; 6,300 thousand carriers at Trunk Line Junctions; 7,100 thousand at Central Junctions; 800 thousand between Lake-Gulf Carriers; 1,300 thousand between

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* Report of Federal Coordinator of Transportation, 73d Congress, 2d Session, Senate Document 152, Appendix A, Table II.

Southeast Carriers; 3,100 thousand between Northwest Carriers in Western Trunk Line Territory; 291 thousand between Pacific Northwest Carriers; 2,700 thousand between Southwest Carriers at Western Trunk Line, Southeastern and Southwestern Junctions; and 600 thousand at Pacific Southwest Junctions. Detailed statements at all important junctions are shown in analyses 14.1, 14.2 and 15.1.

Waterway

Waterways may properly be divided into five geographic territories, namely, Atlantic Coast, Great Lakes, Mississippi System, the Gulf of Mexico and the Pacific Coast. In the Atlantic Coast territory, there were reported in 1932, 5 million tons of intraterritorial traffic, in the Great Lakes territory the reported intraterritorial tonnage amounted to 25 million tons, on the Mississippi System it was 7 million tons, in the Gulf of Mexico the reported domestic intraterritorial tonnage was less than 1/2 million tons, and on the Pacific coast it amounted to 3 million tons.*

An analysis of the flow of traffic is pertinent to any study of water transportation. The more nearly balanced traffic movements are, the greater is the serviceability that can be obtained. On the Great Lakes, in 1932, coal and coke, which moved predominately north and westbound, accounted for 52 percent of the total tonnage handled, while grain, grain products, ore, and forest products, which moved principally east and southbound, amounted to 30 percent of the total. Compared with other years, the movement of ore was abnormally low. In the past there has usually been a more even balance of traffic on the Great Lakes.

On the Inland Waterway-Mississippi System, in 1932, the southbound movement of coal, coke, iron and steel was 55 percent of the total tonnage handled in this service, and sugar and petroleum products, which were among the principal northbound commodities, constituted 22 percent of the total.

In Intercoastal service the commodities which can be reasonably earmarked as moving eastbound, principally forest products and canned goods, constitute about 36 percent of the total tonnage handled and manufactured food, l.c.l., iron and steel, sulphur, and miscellaneous, which moved principally westbound, amounted to about 41 percent of the total tonnage.#

The great variety of commodities handled and the large number of routes operated in the other three territorial groups do not permit the same degree of definite allocation of movements by commodities, as in the case of the Great Lakes Inland Waterway-Mississippi and Intercoastal groups. A study of the individual reports in these groups, however, indicates in practically all cases a reasonably well-balanced flow.

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* Report of Federal Coordinator of Transportation, 73d Congress, 2d Session, Senate Document 152, Appendix A.
# Exhibit 803.

15. Interterritorial Commerce

Railway

For the full year 1932, 25 percent of all carloads originated moved from carriers serving one to carriers serving another of the three Classification Districts.* Of the carloads handled (counted once) by Eastern District Carriers, 17 percent moved to or from the Southern or Western District Carriers. Of those handled by the Southern District Carriers, 41 percent moved to or from the Eastern or Western District Carriers. Of those handled by the Western District Carriers, 19 percent moved to or from the Eastern or Southern District Carriers.

The movement of all cars which were terminated on December 13, 1933 was analyzed in detail to show actual flow between rate territories.

Carloads handled in this test did not show relatively as large a flow between districts as the carloads for the entire year 1932, due doubtless to seasonal variation. The interdistrict cars were 21 percent of the total carloads which is about 16 percent below the flow of the year. This 34 percent of the carloads, however, accounted for 35 percent of the total revenue which (making allowance for the understatement of the one-day test above noted) indicates that about 40 percent of the entire carrier revenue is received from cars which moved between the three districts.#

From a rate territorial standpoint and upon the basis of the one-day test only, without correction for the understatement, 34 percent of the total cars moved in more than one rate territory. Also, without correction, 54 percent of the carrier revenue was produced by cars which moved from one rate territory to another. The only territories in which the revenue of interterritorial cars was less than 50 percent were New England, where it was 42 percent, and Trunk Line where it was 33 percent. In Pocahontas Territory, Pacific Northwest and Pacific Southwest, the revenue from interterritorial cars in each case constituted approximately 70 percent of the total carrier freight revenue of the territory.ø

To facilitate study of the flow of traffic between territories, the principal gateways or junctions at which such traffic was interchanged were grouped into four classes of frontiers: Hudson River Gateways, principally New York City and Albany-Troy, where business between New England and Trunk Line Territories is interchanged; Transeast Gateways, principally Washington, Cincinnati, etc., where business between

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* Analyses 15.2 and 15.3; l.c.l. cars are deducted on the basis of one day's test - December 13, 1933.
# Analysis 16.1.
ø Analysis 16.8.

The East and South is interchanged; Transcontinent Gateways, principally Chicago, St. Louis and Memphis where business between the East and South upon the one hand and West upon the other hand is interchanged; and Transwest Gateways, principally Kansas City, Ogden-Salt Lake City and Omaha where business between the Northwest and the Southwest is interchanged. The flow of traffic is uniformly east or northbound; at the Hudson River Gateways, 67 percent eastwardly; at Transcontinent Gateways, 52 percent eastwardly; at Transeast Gateways, 71 percent northwardly; and at Transwest Gateways, 56 percent northwardly.*

The ratio of empty cars to loaded cars interchanged at Hudson River Gateways was 66 percent; at Transeast Gateways, 90 percent; at Transcontinent Gateways, 90 percent (at Chicago, 93 percent); at Transwest Gateways, 87 percent. The percentage of empty cars to loaded cars in the direction of traffic at Hudson River Gateways was 15 percent; at Transeast Gateways, 30 percent; at Transcontinent Gateways, 57 percent; and at Transwest Gateways, 40 percent.#

Waterway The major interterritorial movement by water is between the Atlantic and Pacific Coast territories. In 1932 that reported amounted to 3 million tons. The movement between the Atlantic Coast and Gulf territories reported was 3 million tons and a little less than 1 million tons were reported as moved between the Pacific Coast and the Gulf.ø These are the only interterritorial movements in which through services were operated. Undoubtedly some tonnage moved between the other territories but such tonnage was transshipped en route.

Petroleum Crude petroleum moved by pipe line from the producing areas to the important Texas and Oklahoma inland refining centers such as West Tulsa, Allen, Cushing, Enid, Oklahoma City, Okmulgee, Ponca City, Drumright, Ardmore, and Blackwell, Oklahoma; to refineries or loading facilities located at Texas Gulf ports including those in the Houston Port district or in the Port Arthur-Beaumont-Texas City-Baytown district, and Engleside, Big Spring-Colorado, West Dallas, El Paso, Tyler, Fort Worth, Henderson, Wichita Falls, Borger, and San Antonio, Texas; Baton Rouge, New Orleans, Meraux, and Shreveport, Louisiana; or northeastwardly to the refining centers at Arkansas City, Augusta, Eldorado, Neodesha, Coffeyville, McPherson and Wichita, Kansas; El Dorado, Arkansas; Kansas City and Sugar Creek, Missouri; Wood River, Robinson, Lawrenceville, Lockport, and the Chicago Port district, Illinois; Cincinnati, Cleveland, Lima, and Toledo, Ohio; or to other refineries scattered throughout the East and Middle West.

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* Analysis 15.1. # Analysis 15.1.

ø Report of Federal Coordinator of Transportation, 73d Congress, 2d Session, Senate Document 152, Appendix A.

The crude oil moved by pipe line to the Texas ports is refined either at these points or reshipped in tank vessels to the great Eastern refinery centers at the New York-Newark Bay district; the Philadelphia, Pennsylvania, Port district; the Baltimore, Maryland, district; and in the Boston, Massachusetts district, principally at East Braintree and Everett, Massachusetts. In some cases crude petroleum moves directly by pipe lines to refining centers in the Interior Eastern Cities and in other cases it is transshipped from tankers to pipe lines and moved as crude to the interior refineries.

The refined petroleum products are usually distributed in the sections of the United States in which the refineries are located or within a reasonable distance from such refineries, with the notable exception of the products refined in the Tulsa, Oklahoma, and Borger, Texas, area which are transported long distances by gasoline pipe lines. The average rail haul of refined petroleum products is approximately the same in all traffic areas despite the restricted areas of production because of the fact that the products are consumed in all regions and the location of refining centers is so scattered as to make long interterritorial movements of refined products usually unnecessary. The crude petroleum produced in the California field moves in large quantities by pipe line to the refining centers or to the transshipment ports located principally in the Los Angeles, California, Basin district; the San Francisco, California, Bay district; or in the Port San Luis-Avila, California, sections. A considerable amount of California crude petroleum is also refined at the interior refineries at Bakersfield and Lebec, California. The crude petroleum produced in the Rocky Mountain region is refined for the most part at the refineries located in the Caspar, Graybull, and Rawlins-Pasco districts, in Wyoming, or at smaller refining centers in Wyoming, Montana, Utah and Colorado.

The crude petroleum produced at the wells in the Gulf Coast district is either refined at the refineries located within the areas or moved to the Texas and Louisiana Gulf ports where it is either refined or transshipped as crude to the Eastern seaboard refineries. The crude petroleum produced in the Lima-Indiana, in the Illinois-Indiana and in the Appalachian districts is usually refined at nearby refineries in these respective fields.

16. National Aspect of Commerce

General

The foregoing analysis of interterritorial traffic demonstrates that with the growth and development of the country, commerce is not confined to rate territories or even the three grand district divisions of the country, but has assumed a definite national aspect, and that interterritorial traffic is now dominant. Nor, as we shall hereafter see, can the continued maintenance of these artificial territories for ratemaking and classification, generally coextensive with carrier ownership, be justified on differences in traffic or transportation characteristics. The fact that 40 percent of the freight revenue arises from interdistrict traffic and 54 percent from interterritorial traffic, appears to warrant reconsideration of the question of where and to what extent regional grouping of carriers from either a rate or a service standpoint is now justified.* This is particularly true in view of the fact which appears from subsequent parts of the report that these artificial boundaries distort rate structures, interfere with speedy and free flow of commerce and result in large transportation wastes.

Railway

For statistical purposes generally and for ratemaking purposes, quite frequently the carriers are grouped into three great Districts; Eastern, Southern and Western, which are coextensive with the three rate classification territories. With several unimportant exceptions, the carriers, individually, as organized groups, and with respect to rate structures and policies, are not markedly different. The extent to which these regional walls are being penetrated by the integration of commerce is shown by the amount of interterritorial business. Insofar as the full year 1932 is concerned, data showing interterritorial movements are confined to the interchange between carriers of the three districts.#

Excluding merchandise (l.c.l.) cars there were 4 1/2 million cars interchanged between the three districts, exactly 25 percent of the total carloads originated. Of this amount 1 million interchanges were between Eastern and Northwestern Carriers; 700 thousand between Eastern and Southwestern Carriers; 2 million between Eastern and Southern Carriers; 300 thousand between Southern and Northwestern Carriers: and 500 thousand between Southern and Southwestern Carriers.#

Dealing with cars which were examined in the one-day test, we find that out of a total of 49 thousand carloads, 10 thousand or 21 percent were interdistrict, indicating that the interterritorial flow on the test day was 16 percent below the flow of the year.ø

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* See section 15, Factual Summary, Railway.

# Analysis 15.1 et seq.

ø Analysis 16.1.

It was possible to classify the interchanges of these cars between rate territories as well as districts. About 25 percent of the carloads originated in New England moved to other rate territories; 23 percent of those originated in Trunk Line Territory; 33 percent of those originated in Central Territory; 65 percent of those originated in Pocahontas Territory; 32 percent of those originated in Southeastern Territory; 36 percent of those originated in Western Trunk Line Territory; 38 percent of those originated in Southwestern Territory; 38 percent of those originated in the Pacific Northwest; and 34 percent of those originated in the Pacific Southwest. Of the total cars, 66 percent were local to the rate territory, and 34 percent interterritorial.*

The number of cars, however, inadequately measures the relative importance of this traffic. The 21 percent of total cars which were interdistrict accounted for 33 percent of total revenue and the 34 percent of interterritorial cars, for 55 percent of the revenue; the 25 percent in New England for 42 percent of the revenue; the 23 percent in Trunk Line for 34 percent of the revenue; the 33 percent in Central Territory for 51 percent of the revenue; the 65 percent in Pocahontas Territory for 72 percent of the revenue; the 32 percent in Southeastern Territory for 53 percent of the revenue; the 36 percent in Western Trunk Line for 55 percent of the revenue; the 38 percent in Southwestern Territory for 59 percent of the revenue; the 38 percent in the Pacific Northwest for 68 percent of the revenue; and the 34 percent in the Pacific Southwest for 71 percent of the revenue.#

The commodity movement of the test day is reflected in analysis 16.3 et seq. As a general rule the proportion of interterritorial traffic increases with the value of the commodity (and from a revenue standpoint of the traffic). While there are important exceptions, in most cases higher proportions of interterritorial traffic are found in Necessaries and Accessories traffics.

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* Analysis 15.1.

# Analysis 16.1.

THE SERVICE

VI ELEMENTS OF TRANSPORTATION SERVICE

17. Definition

Shipper

Of the total carload tonnage which moved by highway, the motivating reason of 57 percent of the shippers was speed; of 9 percent was complete service; of 19 percent, regular or dependable service; of 26 percent, convenient service; and of 34 percent, more adaptable and convenient equipment.*

Petroleum

The service requirements of petroleum traffic are onerous and arise out of the nature of the commodity handled, the relatively restricted areas of the production of crude petroleum, the scattered location of refineries in many parts of the United States, and the wide distribution of the consuming markets.

VII TRANSPORTATION SPEED

18. Basis

General

Throughout the United States today we have a "hand-to-mouth" buying habit which will probably continue for many years to come. There is, therefore, important need for very rapid transportation of small shipments; many small orders are placed daily by telephone for deliveries the next day. This means that transportation facilities (rail, motor or other) must be available for the quick transportation, from day to day, of small shipments. The "hand-to-mouth" buying habit extends in large measure to the buying of large quantities. This means that the carrier transporting large quantity shipments must be prepared to transport these large quantities quickly.

Shipper

In answering the question "For what purpose is the right to route desired", 71 percent of the shippers answered that it was desired to compel good service, a cliché commonly used to mean fast service.

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* Analyses 21.1, 26.1, 30.1, 30.2, 40.1.

Waterway

In many instances, the longer time required by water carriers is due to the circuity of routes. In 1932, the estimated water line service performed amounted to 53 billion ton miles. If the same tonnage had moved between the same points by rail lines, only 37 billion of the ton miles would have been created or 70 percent of the waterline effort.* There are many instances, however, where water services are operated on schedules comparing most favorably with land transportation services, particularly on the shorter coastwise runs, those under about 500 miles, and on the Great Lakes. The factor of speed is of utmost importance as there are definite limits beyond which even lower prices cannot attract business in competition with transportation media offering faster service.

19. Determinative Factors of Speed

Waterway

The question of speed is not confined merely to actual number of miles covered within a certain number of hours while in transit. Departure and arrival time and frequency of schedules play a most important part in measuring the serviceability of water transportation. Size of vessels and methods used in loading and discharging are also important factors in determining actual speed of service rendered.

Petroleum

Continuity and regularity of movement measure the speed requirements of crude petroleum rather than the rate of the passage of the oil past a given point. Petroleum is moved through pipe lines usually at a rate of speed ranging from one to five miles per hour, depending upon the size of the line, the capacity of the pumping facilities, the topography of the district in which the oil is moved, and the urgency of the demand for the oil. Once started, however, the flow is continuous. The transportation of petroleum is directly related to the refining operation and the continuous operation of refineries depends upon continuity in transportation service, which is also necessary in order to avoid the construction of huge and costly storage facilities, and the consequent cost of rehandling between such facilities and the refineries. The consumers of petroleum were limited in 1932 to the products supplied by 372 operating refineries.# The movement to these refineries is a continuous movement and not a broken day-to-day carload or train load lot movement, or intermittent vessel lot movements by water. Deliveries of crude petroleum by tank steamer are usually in lots of approximately 75,000 to 80,000 barrels per vessel. Pipe lines and tankers are much slower in speed of transportation measured in miles per hour, but the fact that the railroad tank car is the unit of rail transportation tends greatly to handicap the railway as a transport facility, despite its greater speed in miles per hour. Because of the extremely limited number of consumers of petroleum traffic, and the large and continuous quantities in which they require deliveries at the refineries, the transportation service requirement is one not of a car, but of a regular, dependable and continuous supply when oil is required. This condition is further emphasized by the vertical integration of the refineries, the crude producers and the pipe lines which in many cases results in the movement being from a consignor to itself over a closely affiliated means of transportation. A serviceable system of transportation for crude petroleum traffic, whether by pipe line, steamship or rail, must be built upon the foundation of continuity of movement.

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* Analysis 70.1.

# Analysis 8.4.

20. Present Transport Speed

Shipper

Examination of several thousand typical movements indicates that for all distances reported (the longest reported highway haul was 2,000 miles) door-to-door service by highway in all States was faster than rail service except in two instances - in Florida for the 300 mile block where rail was faster, and in Virginia for the over 500 mile block where the speeds were the same. The average haul in the 50 mile block was 33 miles. The United States average of the truck time required was 4 hours; for the rail 28 hours. The average haul of the second block (50 to 100 miles) was 80 miles; the average truck time 8 1/2 hours, rail time 33 hours. The average haul of the third block was 156 miles; truck time 12 1/2 hours; rail time 37 1/2 hours. The average haul of the fourth block was 259 miles; truck time 18 hours, rail time 45 hours. The average haul of the fifth block was 396 miles; truck time 27 hours, rail time 57 hours. The average haul of the last block was 781 miles; truck time 51 hours, rail time 85 hours.*

On the average, the truck delivers on the first morning within a radius of 149 miles, the train within a radius of 13 miles. By the second morning the truck's area has increased to 534 miles and the train's to 149 miles. The third morning finds the truck deliveries 920 miles away, the train 419 miles away; and by the fifth morning the truck has delivered within 1,200 miles and the train within 900 miles. These are average speeds for the United States. Generally the speed of both truck and train is slower in the East and South. For distances under 150 miles, Southwest trains are faster than those of other sections; for over 150 miles, the Northwest train makes the best overall time. The truck time is about the same in the Northwest and Southwest.*

The foregoing, however, should be viewed in the light that the service compared is from door to door, and that the averages which include rail terminal time tend to distort the short distance comparison. There are many cases where the individual train schedules are faster than those of the highway.

Railway

The causes for the relatively poor showing of the rail carriers are not difficult to find. Speed restrictions for freight service on good tangent tracks obtain on 99 rail systems which replied to the organization survey. One of such carriers permitted speeds under such conditions of over 55 miles per hour and only two of over 50 miles per hour. One third of the carriers restricted speeds below 36 miles per hour; one half below 41 miles per hour; three quarters below 46 miles per hour; and 98 percent, below 51 miles. In addition to these restrictions, there are numerous agreements between carriers fixing the minimum number of hours within which certain traffic will be delivered.#

The chief cause of rail sluggishness, however, lies in the yard. All railway cars which were terminated on December 13, 1933 were analyzed to determine the car service. The average haul of the carload commodities was 376 miles; the average elapsed hours from the time the car was placed for loading until it was released by the consignee after unloading were 144 hours - a speed of 2.6 miles per hour. About 68 hours of the 144 hours were utilized by the shipper and consignee in loading and unloading the car, about 34 hours each. The speed of the car while it was in the carrier's possession and subject to movement was 5 miles per hour. On the average it was detained by the carrier in the origin terminal about 11 hours before it departed in a road train and at the destination terminal about 15 hours before it was delivered to the consignee. In addition, it was detained at intermediate terminals about 27 hours, so that out of the total of 72 hours of carrier time, only 23 hours, or less than one day, were spent in road trains. While it was in road trains it moved at a speed of about 16 miles per hour.∅

Several factors contribute to terminal delays but all are traceable directly to the practice of assembling carlot units into long trains for movement between terminals. Generally, and this is especially true upon railroads of thin traffic, the long freight train cuts down materially the number of schedules which it is possible to operate, and as a result carriers in 1932, on the average, operated but 2 freight trains each way per day.* Even in the territory of maximum utilization, the Trunk Line, freight trains numbered less than 4 each way per day. Initial delays awaiting the next schedule, under such circumstances, are inevitable.

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* Analyses 20.1, 20.2.

* Analysis 20.2.

# Analysis 20.5.

∅ Analysis 20.3.

An important factor which also is directly attributable to the assembly method is the amount of time spent in intermediate yardings which, as shown above, was 17 percent greater than the time actually spent on the road. These intermediate yardings are due in large part to the necessity for reclassification of the cars, a need which expands directly in proportion to the length of the train.

A further important cause of these terminal delays lies in the interchange of cars between carriers Seventy-seven percent of the total cars were interchanged. The number of carload interchanges, however, aggregated 30 million, which was 12 million in excess of the total number of carloads originated. This means that, on the average, each carload of freight originated was interchanged 1 2/3 times.# When it is remembered that generally, but with important exceptions, each carrier operates its trains and fixes its schedules primarily with the local traffic in view, the delays which result from interchange can be appreciated. This is true at the great terminal gateways as well as at the intermediate junctions. Often freight trains are scheduled to depart in the evening and to arrive in the morning. At such terminals there is often a delay to intercarrier movements of 12 hours or more due to scheduling. In other cases at such terminals, a transfer from the yard of one carrier to that of another - in some instances involving an intermediate switching line - is necessary. Delays in excess of 24 hours at such terminals are not uncommon.

Since train schedules are fixed primarily with respect to departure and arrival at the principal terminals of the operating carrier, with numerous exceptions the time of arrival or departure at intermediate junctions is not considered of prime importance. The loss of time in interchange which results from this fact is further increased by the relative infrequency with which the train schedules are operated.

Waterway In 1932, the average speed of all waterline carriers reporting, including time of loading, transit and discharging, calculated in land miles, was 6.8 miles per hour. Atlantic Gulf Carriers showed

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* Analysis 70.6.
# Analyses 14.2, 15.1.

the highest average, 10.1 miles per hour, while Inland Waterway service was operated at an overall speed of only 3.6 miles per hour. Carriers in the other four groups operated at average overall speed remarkably close to the general average ranging from 7.6 on the Great Lakes to 6.4 miles per hour on the Pacific Coast.* Wide variations, of course, occurred in all groups, and the actual operating speed of vessels was considerably higher than the figures shown above, because much time was consumed in terminal operations.

Contract and private carriers operated generally on irregular schedules governed largely by volumes of traffic available. On the Atlantic Coast, the Pacific Coast and the Great Lakes, there were a considerable number of common carriers who operated daily services on the more important runs. There were, however, a larger number of operations conducted in these three groups on triweekly, twice-weekly, weekly, and even fortnightly schedules. In the Atlantic Gulf service twice-weekly, weekly, and fortnightly services only were offered by common carriers. Intercoastal service by common carriers ranged from twice-weekly to monthly. On the Mississippi system one daily common carrier service was reported. Six common carriers operated semiweekly, five weekly, and nine less frequent services.*

21. Potential Speed

Railway The railway has the potential ability to operate on the road at speeds which are far in excess of those open to other carriers. The fact that over half of the carriers now permit maximum freight speeds of over 40 miles per hour is eloquent testimony of this fact. It is doubtful, however, whether the railway can possibly meet the highway overall speed by any increase in road speed, however great. The average haul of 375 miles in 23 hours running time is approached by the highway's accomplishment of 356 miles in 24 hours. The highway time, however, is the elapsed time from door to door. Since in 23 hours running time the railway must spend over twice that time in terminal operations, no increase in road speed could affect that situation.#

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* Exhibit 802.
# Analyses 20.2, 20.5.

22. Effect of Speedy Service

Shipper

Of the total carload tonnage reported by shippers as moving by highway in 1932, 9 million tons, or 57 percent of the total reported tonnage, was moved by shippers who stated that they used the highway partly on account of its superior speed. Speedy service appears to have been of particular importance to dealers in cooperage material, paper, beverages and liquors, packing house products, bakery goods, cereals, masonry, petroleum products, canned goods and groceries, paints, varnishes and miscellaneous manufactures, iron and steel, and automotive vehicles and parts. The sample of highway traffic obtained in the shipper survey was probably lower than the sample of the traffic of other forms of carriers, owing to the fact that only the larger shippers replied. It was impractical to circularize farmers, retailers and other small shippers, who probably use the highway to greater degree than do the larger shippers. The returns to the questionnaire indicate that between 50 and 100 million tons moved by highway in that year in part because of superior speed.*

VIII COMPLETENESS OF TRANSPORTATION SERVICE

23. Basis of Demand for Complete Service

24. Present Collection and Delivery Service

Shipper

The average cost to the shipper in draying carload freight to and from team tracks was $1.21 per ton or $35 per car. This cost varied from 13 cents per ton ($2.80 per car) in the case of cotton business to $5.42 per ton or $76 per car in the case of boots and shoes business. These 2 businesses, however, are extremes. There were 4 businesses in which the cost was under 30 cents per ton; 20 over 30 cents and under $1; 10 between $1 and $2; 7 between $2 and $3; 2 between $3 and $4; and only 1 over $4 per ton.#

Comparing these costs for general commodity groups with the average revenue per ton of the general groupsø embracing chief commodities handled, shown on analysis 49.1, we find that the drayage cost of Rough Material amounted to 16 percent of the average freight charge; of Raw Material 11 percent; of Semi-processed Material 7 percent; of Necessaries 17 percent; of Auxiliaries 8 percent; and of Accessories 14 percent.

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* Analysis 22.1. # Analysis 24.8.

ø Analysis 45.17 et seq.

The average cost to shippers of providing and maintaining industrial delivery tracks was 6 cents per ton or $1.70 per car (one terminal).*

Railway

Of the total car deliveries (including l.c.l.) in 1932, 32 percent were on house tracks, 10 percent on team tracks, and 58 percent on industry tracks.# Dealing with terminated cars only, 91 percent of the house track cars were l.c.l. and 9 percent carload. Of the l.c.l. deliveries 95 percent were house track and 5 percent other tracks,ø which indicates that for all commodities⁄ and the country as a whole the carload cars on house tracks may be taken as offsetting l.c.l. cars on other tracks, the team track deliveries as the equivalent of carloads not collected or delivered, and the industry track deliveries as the equivalent of carloads collected and delivered. On this basis, 82 percent of rail carloads were collected or delivered on industry tracks in the country as a whole; 87 percent in New England; 88 percent in Central and the Pacific Territories; 93 percent in Pocahontas; 84 percent in Trunk Line and the South; and 83 percent in Western Trunk Line and the Southwest.

In analyses 24.1 et seq., the car track terminations in 1932 are shown by commodity groups. The difficulty here is that the connection deliveries are not classified by tracks. From analyses 105.4 and 105.5 it is possible to distribute these connection deliveries between tracks upon the basis which all commodity deliveries (originations and terminations) were distributed. For the United States as a whole, out of 5,718 thousand multiple carrier deliveries, 5,165 thousand (91 percent) were to industry tracks, 3 percent to team tracks and 6 percent to house tracks (including of course l.c.l. cars). If the latter be deemed the equivalent of house track cars, the industry track percentage rises to 97 percent. Applying the latter percentage to the connection delivery terminations shown in analysis 24.1, it can be estimated that of the carload terminations, 78 percent were on industry tracks and 22 percent on team tracks.

It was not possible from available data to analyze carload collections (originations) by commodities for the year 1932. Dealing with the traffic as a whole, it would appear that if anything a larger proportion of the cars were collected than delivered - about 90 percent.**

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* Analysis 24.8. # Analysis 105.4. ø Exhibit 107.

⁄ This is not true of individual commodity groups.

** Analysis 24.6. Industry and connection track cars originated about 61 percent of total cars originated. Industry and connection track cars terminated about 57 percent of total cars terminated.

A commodity track analysis of collections on the one-day test confirms this conclusion.* From this analysis it appears that about 86 percent of cars originated were on industry tracks.

The extent to which the rail service is thus incomplete varies widely among the different commodities. Using the method above outlined, it appears necessary to dray to the team or house track about 27 percent of grain; 31 percent of perishables; 44 percent of live animals; 31 percent of forest products; 47 percent of cotton, hay and tobacco; and 29 percent of textiles and leather.# With the exception of the last named, these are raw or home-processed farm products. On the other handø it is necessary to dray from the house or team track 54 percent of sand, stone and gravel; 66 percent of perishables; 24 percent of live animals; 28 percent of cotton, etc.; 33 percent of paper; 45 percent of processed cereals; 46 percent of miscellaneous farm products; 31 percent of edible animal products; 28 percent of manufactured foods; 47 percent of building materials; 23 percent of iron and steel articles; 49 percent of appliances, furniture, machinery and automobiles; and 46 percent of glass, tile, etc.

From the foregoing, it appears that complete collection and delivery is much more generally accorded the processing agency than is accorded either the original producer, or the retailer or consumer. While this may appear to be favoritism to the "big shipper", it rested upon the sound business principles that it was only this class of shippers whose volume justified the expensive industry track facilities prior to the time when truck delivery was possible.

Waterway

While it is true that only a small part of water-borne tonnage actually originates or terminates at the ends of water routes and although at least half of the total water traffic was handled by rail carriers for part of the complete movement, on much of which private siding service was afforded, the demand for door-to-door service by water carriers has become increasingly insistent. Some important carriers, particularly on highly competitive movements between the larger cities, have inaugurated collection and delivery in conjunction with highway operators.

Petroleum

The most efficient method of collecting the supply from the many wells, the production of which must be combined in order to provide the necessary supply for the refineries, is the gathering pipe line. Approximately half the pipe line mileage of the country consists of these gathering lines,⌿ the remainder being the trunk lines which connect the points at which the petroleum is concentrated by the gathering lines with the refining centers. Gathering lines quite generally are temporary in their nature, relatively cheaply constructed, so that they may be taken up and relaid in new locations as the crude production declines in one field and new fields are opened.

Further facilities necessary for the transportation of crude petroleum are storage facilities at the points of origin and destination. The storage facilities at the concentration points are really parts of the gathering line facilities, while those at destination are parts of the trunk line or refining facilities. Another type of storage facilities is the working storage tanks used in the operation of pipe lines in order to maintain a proper flow in the pipe lines by providing storage for the oil en route until the lines ahead are ready to receive it. Tanks of this type are especially important where the pipe lines traverse sections of the country with uneven topography so that the rate of flow causes an accumulation at low points in excess of the amount which can be moved upgrade conveniently by pumping stations.

Still another type of storage facilities includes tanks used for the storage of the refined petroleum, including gasoline, kerosene, and other refined products awaiting sale or distribution. While the consumption of gasoline is quite widespread throughout the United States, it is not uniform throughout the year. Many refineries find it necessary to balance their manufacturing and distribution operations during the year by the construction of large tank farms. This class of storage facilities is not properly a part of the transportation service, but rather a plant accessory.

Until recently, gasoline was distributed from refineries by railway tank cars to local stations where the oil was emptied into small storage tanks, from which it was distributed to the local dealers by tank trucks. This method of transportation involved extra handling at the refineries and at the distribution points. With the development of hard surfaced roads and large tank motor trucks, there has been a steadily and rapidly increasing movement of gasoline from the refineries or substations direct to the local dealer by tank motor truck eliminating entirely the intermediate rail haul. In a number of cases pipe lines have been constructed or old crude petroleum pipe lines have been adapted to transport refined petroleum products from the refineries to distribution centers from which the refined oils are transported by motor trucks to the retail distribution stations.

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* Analysis 24.7.

# Analysis 24.7.

ø Analysis 24.1.

⌿ Analysis 70.1.

25. A Universally Complete Service

General

Study of all known designs of demountable bodies or containers, to be used as an instrument in coordinating rail, highway, and waterway transportation, as well as methods and devices for transfer between car, truck, boat and shipper's platforms, in actual operation and from models and drawings, indicates that an immediate opportunity is presented in the highway movement of containers to and from railroad team track yards and marine docks. The amount of traffic available and the approximate savings which would result through the use of containers compared with the present method of unloading from railroad cars into trucks and vice versa. are shown in analysis 25.1.

In many instances where industries now have rail connections it would be quicker, more convenient, and less expensive to make delivery or receive quantity shipments in containers via highway, instead of through present switching arrangements.

Analysis 106.13 covers a wide range of container movements, from average loaded hauls of 1 1/2 miles up to 33 miles, with a total distance traveled per truck of from 35 to 150 miles per 8-hour day. This takes care of the most congested conditions in our largest cities, as well as movement of containers by highway in place of way or branch line trains. The basic tractor semitrailer operating costs shown in the analysis are, of course, average costs and are subject to revision to meet specific conditions. In order to attain the operating performance at the expense shown, a unified highway terminal operation under one central management for each metropolitan area is not only highly desirable but essential. Such a set-up could be effected by present terminal truck operators without loss of corporate individuality and with increased profits for each company joining the terminal organization. No huge amalgamation of trucking companies is indicated - merely a cooperative effort on the part of existing companies to eliminate duplication and waste in present operating methods.

26. Effect of Complete Service

Shipper

Shippers were not asked to state whether the complete service available by highway influenced the selection of a transport agency. That it was influenced is shown by other facts reported. The shippers were asked to report the amounts which they paid for drayage (carlots only) to and from railheads. Those who reported such costs, of necessity used team track service in some degree. Whether or not others who did not report these costs failed to do so because there were none or because the records were not available is not known.

The shippers who reported the costs shipped or received about 5 percent of the total tonnage but over 9 percent of the highway tonnage. In other words while this class of shippers represented a relatively small part of the total tonnage, they utilized the highway to a 80 percent greater degree than the shippers who enjoyed the benefit of complete delivery through side tracks, assuming all who reported no costs had such tracks. This fact is significant since this class of off track responding shippers is more typical of the smaller individual shippers from whom relatively few returns were had.*

Considering the specific business of those who reported drayage charges, we find that 35 percent of their perishables moved by highway, 25 percent of live animals, 27 percent of lumber, 23 percent of beverages and liquors, about 50 percent of packing house products, canned goods, and groceries, and between 20 and 40 percent of furniture, leather goods, textiles, boots, shoes and clothing.#

IX SCHEDULE CORRELATION

27. Demand for Schedule Correlation

28. Extent of Present Schedule Correlation

General

The facility to effect correlation varies almost directly with the number of sales units moved in a schedule. Correlation can be accomplished whenever the sales transport unit is synchronized with the unit. Thus, in the case of motor truck lots, the departure or arrival can be synchronized with the patron's requirements. The "low" in utility value is probably reached in the case of a weekly or semiweekly sailing (either boat or train). In the case of the water carriers, the handicap is one inherent in the nature of the transport facility used. It is generally assumed that the same thing is true of the rail carrier. With an average of two schedules per day, train operation begins to approach the inflexibility of marine operation. A further cause of infrequent schedules is the tendency of common carriers, rail and water alike, for competitive reasons, to schedule their arrival and departure at about the same time instead of staggering them throughout the day.

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* Analysis 26.1.

# Analysis 26.1.

Railway

For a number of years past it has been accepted as approved "railroading" that the ton-mile unit cost of operating a train varies inversely with the size of the load. The tendency has been toward bigger and bigger power, cars and trains. There is no doubt that under the conditions which then existed this policy did result in lower costs and did enable the railroads to surmount constantly rising wage costs. This policy of heavy trains resulted, of course, in relatively fewer trains. Indeed that was its primary objective. Foregoing, for the time being, only the question of operating economy, it must be conceded in all fairness that the policy did not promote the cause of good service.

Irregular service is a further consequence of infrequent schedules. This arises from the fact that many different cars must be assembled into a single schedule. The movement of all cars depends upon the movement of the most sluggish. This is true of receipt in the initial terminal and also in intermediate terminals and junctions, and in road operation.

29. Potential Schedule Correlation

30. Effect of Schedule Correlation

Shipper

Of the reporting shippers, those shipping or receiving 11 percent of the total tonnage and not quite 20 percent of the highway tonnage reported, assigned as a reason for the selection of the highway the fact that its schedules were more regular or dependable. These shippers represented practically every type of business, and were responsible for over 50 percent of the total highway tonnage of the paper shippers; 73 percent of the packing house product shippers; and 74 percent of the structural iron and steel shippers.*

About 12 1/2 percent of the total tonnage and about 26 percent of the highway tonnage was reported by shippers who assigned more convenient schedules as a contributing factor which influenced their choice of the highway. The proportion of the highway to total tonnage was much higher among this group than in the case of the average. For the group as a whole, 12 percent compared with the average of 6 percent; for fresh fruits and vegetables, 41 percent compared with the average of 20 percent; for cooperage material, 45 percent compared with the average of 19 percent; for groceries, 53 percent

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* Analysis 30.1.

compared with the average of 23 percent; leather, 28 percent compared with 8 percent; dry goods, 54 percent compared with 23 percent; structural iron and steel, 37 percent compared with 2 percent; machinery, vehicles, etc., 13 percent compared with 4 percent; and plumbing supplies, 40 percent compared with 4 percent.*

X ADAPTNESS

31. Nature of Demand for Adaptness

32. Present Adaptness

Shipper

The cost of packing, crating and otherwise preparing goods for rail shipment averages $1.71 per ton, or $50 per car. Wide variances are observable between the business groups, from 3 cents per ton in the case of coal and coke, to about $10 per ton in cases of fresh fruits and vegetables, packing house products, and machinery and vehicles.# Comparing the cost per ton of the six general business groups with the freight charges per ton of the corresponding commodity groups shown in analysis 49.1, we find that in the case of Rough Material, the cost is equal to 7 percent of the freight charges; Raw Material 27 percent; Semiprocessed Material 28 percent; Necessaries 49 percent; Auxiliaries 6 percent; and Accessories 19 percent.

The average cost of loading and unloading is 35 cents per ton or $10 per car. The bulk materials with the exception of petroleum cost between 6 1/2 and 10 1/2 cents per ton; petroleum 17 1/2 cents; vegetable oil, cake, etc., 16 1/2 cents; sugars and sirups, and bakery goods 12 cents; structural iron and steel 12 1/2 cents; and iron and steel articles 17 cents.#

In 4 business groups the cost is in excess of $1 per ton, horticultural material, packing house products, porcelain, china, etc., and machinery and vehicles. In 24 cases out of 43 the cost ranges between 25 cents and $1 and in 11 of these cases, above 50 cents per ton.#

The reductions possible through the use of mechanical loading and unloading devices can be shown partly by comparison of the loading and unloading costs, reported by shippers for commodities whose nature and the rail equipment furnished therefor permits this character of loading with those of commodities whose nature permits such loading but the rail equipment generally furnished does not. The reported costs of loading and unloading sand, stone and gravel, grain, coal, ores, chemicals, structural iron and steel, all of which are largely mechanically handled, run from 8 to 12 cents per ton. On the other hand, lumber costs 74 cents per ton; cotton 44 cents; paper 36 cents; and masonry materials 30 cents. All of these commodities permit mechanical handling. Many of these commodities can be and are mechanically loaded on water vehicles.*

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* Analysis 30.1.
# Analysis 32.1.

Specific data were not gathered regarding shipper and carrier expense in protecting or paying for protection of freight against heat and cold.

Petroleum The concentration of the crude petroleum production areas requires a transportation service which is closely adapted to the peculiarities of the traffic, with respect to plant capacity, continuity and dependability of service, gathering and storage facilities, and peculiarly constructed and highly specialized equipment. Gathering lines must be constructed and located so as to connect wells as they come into production with trunk lines and storage facilities at the junctions between the trunk and gathering lines. These terminal pipe lines must be laid so that they can be readily relocated when wells cease production to serve new wells as they come into bearing. The lines must be constructed of pipe adapted to the varying sulphur content of the petroleum so as to resist the destructive processes of the oil.

Storage tanks at originating concentration centers, at destination distribution centers and at intermediate points along the trunk pipe lines must be provided in which to accumulate the oil prior to movement, to store it awaiting delivery, and to equalize the flow in the trunk pipe lines.

Pumping stations must be provided at varying distances along the trunk lines, the spacing of the stations depending upon topography, the size of pipe and the capacity of pumps, in order to provide for the even and continuous movement of the oil.

Telephone and telegraph facilities must be provided in order to control the movement of the traffic and to afford shippers and consignees facilities for communicating orders concerning the movement and delivery of the oil. Inspection and reporting facilities must be provided to insure the prompt discovery and reporting of breaks and leaks in the lines which are not only costly in oil loss but dangerous fire hazards.

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* Analysis 32.1.

Pipe lines of necessity are constructed exclusively for the transportation of crude petroleum, or gasoline, excepting those which are used for the transportation of natural gas. Rarely is one type of pipe line suitable for the transportation of more than one of these kinds of petroleum traffic, although it is possible by reconstruction and rearrangement of the facilities to adapt a line originally constructed for crude petroleum to the transportation of gasoline, and to transport different grades of refined petroleum over the same line in successive lots on the same line at the same time, one lot behind the other. This has been done in several notable instances and several grades or kinds of refined petroleum are transported through the same pipe lines at the same time.

The transportation by rail of crude petroleum and the great bulk of refined petroleum must be accomplished by the use of specially designed tank cars which ordinarily are not adapted to the transportation of any other traffic. A large number of special tank cars are owned by shippers who receive from the railways a mileage allowance for their use. From a transportation standpoint, the equipment is rarely used in more than one direction, resulting in a high ratio of empty to total car miles. A compilation of about 128 thousand tank cars taken from the Official Railway Equipment Register showed that railroad owned tank cars hold on an average approximately 217 barrels or 33.7 tons, while the average carrying capacity of privately owned tank cars is about 270 barrels or 42 tons, and the weighted average capacity of all tank cars in use in 1932 was about 266 barrels or about 41.4 tons. Because of the large units in which crude petroleum is sold, there has been a tendency in recent years to increase the capacity of the tank cars.

33. Potential Adaptness*

34. Effect of Adaptable Equipment

Shipper About 13 percent of the total tonnage and 28 percent of the highway tonnage was reported by shippers who assigned more liberal packing requirements as a factor leading to the use of the highway. The percentage of highway patronage among these shippers was over half that of the average shipper. Significant businesses in which this consideration influenced more than the average tonnage to the highway were lumber, 30 percent; beverages and liquors, 35 percent; groceries, 56 percent; and iron and steel articles, 21 percent.#

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* See sections 83 and 86 infra.
# Analysis 34.1.

XI ELEMENTS OF FREIGHT CHARGES

35. Determinative Factors in The Price System

Shipper The shippers were asked to point out which of the following factors were of influence in determining the extent to which the highway rather than the railway was used: Lower minimum weights, more liberal commodity mixture, or lower charges. Shippers and receivers of 34 percent of the highway tonnage said the smaller weight requirements; 26 percent the more liberal commodity mixture; and 60 percent the lower charges.*

36. Reorganization

XII FREIGHT TRAFFIC SALES UNIT

37. Sales Units Required

General That the unit in which transportation is sold is a factor of great importance is evidenced by the fact that the shippers of over one third of the total highway tonnage found the rail unit unsuitable. # It is of primary economic importance that the units in which many commodities are purchased or sold, processed and transported have become much smaller in recent years. Scheduled and mass production, all-weather highways, a multitude of trucks of less cargo capacity than railway cars, increased speed of transportation, decentralization of industry, key-city distribution of products, small inventories, frequent purchases of fresh goods, "hand-to-mouth" buying all have brought about the necessity for transportation units of a size smaller than the present box car. The shipper constantly is seeking lower carload minimums for semiprocessed and processed products.

Considering basic raw materials we find the opposite tendency as to the size of transportation units. The development of large scale factory production, processing machinery of tremendous capacity, and economies inherent in handling large quantities of bulk material, all point toward transportation vehicles of large cargo capacity, with corresponding

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* Analyses 40.1, 45.25, 50.1. # Analysis 40.1.

reduction in tare weight compared to lading, lower maintenance costs, reduced handling expenses, expedited and more economical movement. While the customer does not directly demand such cargo vehicles, it is significant that because of lower charges he tends to patronize carriers which provide them. In 1932, over 95 percent of crude petroleum and about 55 percent of refined petroleum moved by cargo carriers.*

38. Present Transportation Sales Units

General The carriers' sales units are deficient in two important respects, physical equipment and adaptation to trade usages and requirements. Specifically, rail and water carriers fail to provide equipment for the present day smaller "quantity" shipments (as distinct from capacity carload shipments) while rail and highway carriers in general do not use vehicles of great capacity for the large scale movement of bulk commodities. All carriers which transport goods in accordance with published tariffs in general fail to follow the usual trade custom of quoting quantity discounts.

Shipper Each of the shippers reported the number of consignments of 5 tons or more and the aggregate weight received or shipped by rail, water or highway in 1933, thereby making it possible to obtain average loads (per shipment) of each transport agency. Attention already has been drawn to the fact that the railway averages reported are practically identical with those of all rail traffic. Dealing with the outbound shipments we find that the average load of all traffic by water was 128 tons, by rail 29 tons, and by highway 6 tons. The average water shipment for businesses generally dealing in cargo loads were: Sand, stone and gravel, 1,800 tons; grain, 4,100 tons; ores, 230 tons; petroleum, 664 tons; metals, 100 to 200 tons. On inbound fuel, what appear to be cargo loads run as high as 7,000 tons.#

The rail average outbound load varies from 7 tons in the case of the dry goods business group to 53 tons in that of sand, stone and gravel. Inbound varies from 8 tons in the case of bale cotton to 49 tons of ores and concentrates.#

Of the outbound tonnage, 5 businesses had average loads by rail of over 7 and under 10 tons per car; live stock, 9 tons by rail and 3 by highway; furniture and furnishings, 8 tons by rail and not quite 5 by highway; textiles, 8 tons by rail and 5 1/2 tons by highway; and automotive vehicles and parts, 8 tons by rail and 5 by highway.

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* Private and contract water carriers and pipe lines; analysis 7.6. # Analysis 38.1.

Six businesses shipped loads averaging between 10 and 15 tons each: Cooperage, 13 tons by rail and 3 by highway; packing house products, 13 and 6; shoes, 14 and 7; rubber tires, etc., 12 and 7; machinery, 12 and 5; and tobacco 14 tons by rail and 8 tons by highway.*

Seven businesses shipped loads averaging between 15 and 20 tons each: Fresh fruits and vegetables, 17 tons by rail and 6 1/2 by highway; beverages, 15 and 7 1/2 tons; bakeries, 19 and 6 1/2 tons; chinaware, 17 and 3 1/2 tons; leather, 17 and 7 tons; paints, 15 and 4 tons; books, etc., 15 and 7 tons, respectively, by rail and highway.*

Twelve business groups shipped loads averaging between 20 and 30 tons: Cotton, 22 tons by rail and 6 tons by highway; paper, 21 and 7 tons; horticultural material, 24 and 5 tons; sugar and sirups, 21 and 6 tons; vegetable oils, 24 and 6 tons; canned goods, 22 and 9 tons; groceries, 22 and 4 1/2 tons; cereals, 23 and 7 tons; department stores, 20 and 7 1/2 tons; lumber, 27 and 9 1/2 tons; petroleum, 29 and 10 1/2 tons; miscellaneous business, 27 and 3 1/2 tons, respectively, by rail and highway.*

The highway average load, with some notable exceptions, was fairly constant. Outbound shipments averaged 6 tons. There were 9 businesses in which the average load was less than 5 tons; 9 between 5 and 6 tons; 6 between 6 and 7 tons; 14 between 7 and 9 tons; 3 between 9 and 10 tons; and 1 over 10 tons. Inbound shipments averaged 5 tons. There were 12 businesses whose average load was less than 5; 9 between 5 and 6 tons; 8 between 6 and 7 tons; 5 between 7 and 8 tons; 6 between 8 and 9 tons; 1 between 9 and 10 tons; and 1 between 11 and 12 tons.*

The highway operator is much more favorably situated, the range of truck capacities paralleling quite closely the needs of shippers, except for the movement of low-valued bulk commodities in large quantities. A comparison of the average vehicle load reported by shippers via railway and highway indicates that in general the average load via highway is from 1/5 to 1/3 of the corresponding rail load. For all commodities, the average highway load is 21 percent of the rail load, while for each of the six principal groups the highway load is 12 percent for Rough Material; 16 percent for Raw Material; 33 percent for Semiprocessed Material; 31 percent for Necessaries; 18 percent for Auxiliaries; and 28 percent for Accessories, respectively, of the railway load. While the bulk or density of the commodity and the allowable length and weight restrictions imposed by highway authorities have some influence on the size of the highway load, nevertheless the variations in average highway loads as between specific commodities indicate that shippers' needs influence the size of load transported by trucks.*

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* Analysis 38.1.

Railway In the case of several important commodities, chiefly among those which move in "open top" cars, the carload minimum is the capacity of the car. In practically all instances of box car shipments the minimum weight required is far below the capacity of the car. Since the average box car load in 1932 was about 50 percent of the volume or weight capacity,# the average minimum weight of necessity must have been considerably below that amount. The cubical and weight capacity of the average car has steadily increased through the years. Three decades ago the "standard" length of box cars was 36 feet, average capacity approximately 2,000 cubic feet and 60,000 pounds. Then came the 36-foot car of 2,500 cubic feet and 80,000 pounds capacity. The present standard box car has an inside length of 40 feet 6 inches with capacity of 3,311 cubic feet and load limit of 125,650 pounds. Similarly, the increase in size and capacity of gondola and hopper cars can be traced from 30 tons capacity to 50 tons and 70 tons, with more than 1,000 gondola and hopper cars of 90 tons or greater capacity in use today.

Not only is the idea of a standard carload illusory, but the payload that can be carried varies almost with every commodity. This, coupled with the fact that the capacity of the average car is increasing while the customer's requirements in the case of many commodities are in the opposite direction, leaves the rail carriers in a dilemma. To reduce the carload minimum load requirements to a weight sufficient to attract a substantially larger volume of traffic would not help, because each car would be underloaded, more cars would be required to handle the traffic, the cost per ton of transporting goods would rise, and consequently either freight rates or the carrier deficit would be increased.

In a recent study by the Official Classification Committee, it was found that in the total ratings, 6,244 in number, there were 28 minimum weight categories prescribed which varied from 5 to 32 1/4 tons. Of these ratings 29 percent were 15 tons; 24 percent 18 tons; 18 percent 12 tons; 7 percent 10 tons; 6 percent 20 tons; 4 percent 6 tons; 3 percent 5 tons; and 2 percent 8 tons; or 93 percent of the ratings in 8 of the 28 categories, all of which were 20 tons or less whereas the present standard box car has a weight capacity of over three times that amount.

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* Analysis 38.1.

# Analysis 90.3.

The rail carriers' cost varies with gross weight units, while its service must be priced in net weight units. The economy of its transport depends largely upon its ability to reduce the carriage of dead weight to a minimum. Hence the need for heavy loading of cars which is the occasion for the present system of carload minimum weight requirements.

The amount of freight which will be shipped in a car depends upon four factors: (1) The amount which the patron desires to ship; (2) the cubical capacity of the car; (3) the weight capacity of the car; and (4) the density (weight per cubic foot) of the commodity. It is to the interest of the carrier to secure the use of the maximum capacity in volume or weight, but frequently to the interest of the patron to use much less. The conflict of interest has been partially met by the prescription of minimum weights for which the shipper must pay.

Waterway

Present sales units of water carriers are of two types only, full cargo or part cargo lots handled on contract rates or by the owner in his own or leased vessels, and carlots which approximate in size the sales units of rail carriers, i.e., carload and less than carload lots.

Cargo lots usually of bulk commodities, handled by contract and private carriers, constituted about 60 percent of the tons reported. There were three districts in which the ton miles of contract and private carriers totaled one billion or more. Marked distinctions between the operations of common carriers, who handled principally carlot shipments, and cargo carriers were evident.*

In the Great Lakes district, cargo carriers handled 24 million tons for an average distance of 669 miles with an average load per vessel of 5,500 tons and created 15,900 million ton miles. Common carriers in this district handled 3 million tons for an average distance of 428 with an average load per vessel of 700 tons resulting in 1,300 million ton miles.*

On the Atlantic Coast, cargo carriers handled 3 1/3 million tons for an average distance of 646 miles with an average load per vessel of 4,000 tons which created 2,200 million ton miles, while common carriers in this district handled 4 2/3 million tons, an average of 425 miles with an average load per vessel of 350 tons, resulting in 2,000 million ton miles.*

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* Analyses 70.2, 70.3.

In the Atlantic Gulf trade, cargo carriers handled 500 tons for an average distance of 1.901 miles with an average load per vessel of 6,000 tons which created 1,000 million ton miles, and common carriers in this service handled 2 million tons for an average distance of 1,900 miles with an average per vessel of 1,200 tons resulting in 3,390 million ton miles.*

On the Inland Waterways, cargo carriers reported 600 thousand tons which moved an average distance of 1,100 miles with an average of 2,600 tons per load resulting in 644 million ton miles, and common carriers handled 2 1/4 million tons an average distance of 1,033 miles with an average of 2,800 tons per load producing 2,368 million ton miles.*

Contract and private carrier operations in the Intercoastal trade and on the Pacific Coast were not reported in sufficient volume to warrant similar comparisons, but common carrier figures in the Intercoastal trade were 4 million tons handled an average distance of 5,840 miles with an average load per vessel of over 3,800 tons creating 22,880 million ton miles, and on the Pacific Coast common carriers handled 2 1/2 million tons an average distance of 371 miles with an average load of 300 tons per vessel producing a total of 960 million ton miles.*

Petroleum

Several factors contribute to the size of the transportation sales unit of petroleum traffic, particularly crude petroleum - first, the need for continuity of operation; second, the necessity of separating the runs of different shippers; and third, the desire of larger refineries owning the pipe lines to restrict the number of enterprises engaged in the business to a relatively few large concerns.

The average transportation sales unit or minimum tender requirement of pipe lines transporting crude petroleum, upon the weighted average for 59 representative crude petroleum minimum tender requirement, is 8,823 tons. The "minimum tender requirement", as these traffic sales units are called, vary from 1,000 barrels to 100,000 barrels. In order to avoid undue burden upon the smaller shippers, the minimum tender requirements of some pipe line companies are modified by legal restrictions or aggregation rules, by permitting lots from a number of consignors to be aggregated and stored at origin until the minimum tender requirement is reached and the aggregated lots are forwarded as one run to a single consignee. State laws also sometimes limit the minimum tender requirements.

The gasoline pipe line uniformly requires a minimum tender of 7,750 tons.#

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* Analyses 70.2, 70.3.
Analysis 38.3.

Pipe line carriers are limited as to commodities transported, amount shipped, and form in which the commodity moves. Only liquid commodities in large quantities are acceptable, and to date each pipe line is used to transport a single product or closely related products. The large volume in which shipments move via pipe line are shown by the minimum tender requirements of all principal pipe carriers. The weighted average minimum tender of 8,823 tons for crude petroleum is equal to 238 railway tank cars of 10,000 gallons capacity each, while the highest minimum tender requirements of 15,500 tons is equivalent to 419 tank cars of 10,000 gallons capacity each. A minimum tender requirement of 7,750 tons of gasoline is equivalent to 254 tank cars each of 10,000 gallons capacity. Incidentally, such business could be handled by railways at much less than the present average per car cost if it moved in solid train load lots and in cars of a capacity of 20,000 gallons or more, as will be hereinafter shown.*

39. Modern Sales Unit

General

The sales unit which will meet the requirements of the modern day, both from the viewpoint of shippers and carriers, requires a transportation vehicle having the maximum volume and weight capacity which can be economically and expeditiously transported by railway, highway and waterway interchangeably, and at the same time not exceed the lading capacity desired by the majority of shippers.

In the discussion of vehicles, section 82 et seq., it is shown that, having due regard to the density of the materials, an efficient equipment unit for coordinated transportation service is a container having a capacity of approximately 500 cubic feet and 25,000 pounds, dimensions 8 feet wide, 8 feet high and 10 feet long, designed to carry bulk, packaged and perishable commodities. Such a unit can be moved on highways of any State, though with 25,000 pounds payload in only 25 States. The average load per container would be about 9 tons which could be legally trucked in 38 States. By rail, five containers can be carried on a flat car of the same length as the present standard box car, producing a payload considerably greater than the present average carload shipment.

That such a unit would meet the needs of shippers is obvious. The cubical capacity of the container is approximately one fourth less than that of the ordinary truck body which carries general merchandise. At the same time the container has a cubical capacity approximately one fifth of the average box car. This permits the movement of commodities in quantities adjusted to the demands of all shippers but at no increase in the cost per ton for transportation agencies.

Such a sales unit opens a large field for increased transportation of present carload commodities as well as for promoting the shipment of goods which now cannot be profitably marketed due to carload minimum weight requirements. For example, perishable fruits, vegetables, fresh meats, etc., would move directly to small communities in part carload containers where at present there is little movement, owing to inability to consume a full carload.

When a unit more closely approximating today's business requirements and one which can be used interchangeably by rail, water and highway carriers has been adopted, business should not be fettered by any fixed minimum weight, but should be permitted to move any amount within the capacity of the equipment, the price being varied in accordance with the total weight, net and tare, which the size of the shipment requires.

There remains the matter of providing proper sales units for larger than single carload shipments. This demand can be partially met by providing cars of greater capacity, for handling materials such as coal, ores, crushed stone, other minerals, grain, perishables, lumber, crude oil, gasoline and other petroleum and liquid products. The shipper is not particularly interested in the size of the container in which shipments are made, but the carrier can realize decided economies by using cars of, say twice the present average carload capacity. An open-top, hopper-bottom car of 100 tons load limit is recommended for the movement of dry bulk materials and a 20,000 gallon tank car, 80 tons load limit, for liquid commodities. Such cars can be built which require only four-wheel trucks, readily negotiate all curves ordinarilv encountered, "train" well with other cars, and do not require special maintenance equipment.*

The railway should follow the lead of the water and pipe carriers in providing cargo rates. The shippers report cargo loads by water which average for the year as high as 5,000 tons. The average pipe line cargo unit is about 8,000 tons. The question arises as to whether or not the railway should be permitted to make cargo rates in view of early decisions of the Commission to the contrary, which are cited in the note.* The principle of these decisions does not apply to modern conditions. In a later connection it will be shown that yard expenses constitute over half the total railway cost. These expenses arise largely, if not entirely, because of collection, assemblage and delivery of carlots. In a train load operation from origin to destination track they can be practically eliminated. Further, the average train of carlots is less than 30 cars.# Requirement of a minimum cargo of 5,000 to 10,000 tons in loads of 80 tons per car will enable the operation of fully-loaded trains. The cost of such operation would be markedly less than the cost of carlot train operation. The fear that the "little man" would suffer under such an arrangement is not well taken. All that he has open now are the relatively high carlot rates of the railway while his strong competitor has provided himself with miles of pipe lines or fleets of vessels. If his condition were changed at all it would be for the better, to the extent that alone or in cooperation with others he could take advantage of such rates.

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* Analysis 38.3, sections 82 and 113.

* See section 82 for description of large capacity tank cars.

The practice has had exactly the reverse effect in the transportation of petroleum traffic. By handling the traffic in carload units rather than train load units, the rail carrier has been subjected to large additional terminal costs which would not be encountered in cargo transportation and for that reason is compelled to charge rates based upon such costs and much higher than necessary if it were permitted to handle the traffic in train load lots from origin to destination without intermediate or terminal switching. The result has been that the large shippers have found it possible greatly to reduce cost of transportation through the utilization of proprietary or closely affiliated facilities - the pipe lines and marine tankers - thereby obtaining a decided

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* Paine Bros. & Co. v. Lehigh Valley R.R. Co., 7, I.C.C. 218 (1897); Woodward-Bennet Co. v. San Pedro, L.A. & C.L. R.R. Co., 29, I.C.C. 664 (1914); and Miller & Lux, Inc. v. Southern Pacific Co., 41, I.C.C. 617 (1916) are the only cases in which the issue of multiple carload rates was raised, and in each, were condemned as discriminatory. The same conclusion has been intimated in dicta and statements arguendo of many other decisions, but the only case of this sort since 1920 was in Kingan & Co. v. Director General, 89, I.C.C. 550 (1924). On the other hand since the Transportation Act of 1920, in several cases involving reasonable carload rates the Commission has considered the fact that the traffic moved in train load lots such as "Petroleum From Arkansas", 104, I.C.C., 651 (1925).

# Average all trains, 26 loaded cars (analysis 109.1); manifest through trains, 48 loaded cars and drag trains, 32 loaded cars (analysis 109.2)

advantage over small shippers who cannot afford to acquire these facilities and compelling such a shipper to use the facilities of his competitors at charges which, while in excess of the actual cost to the competitor, are still substantially lower than the charges applicable via rail. The failure to provide cargo rates on petroleum has discriminated against the small shipper and is not an inconsequential factor in the concentration of the petroleum industry in the hands of a relatively few concerns.

40. Effect of Modern Sales Unit

General

About 13 percent of the total tonnage and 34 percent of highway tonnage were reported by shippers who used the highway in part because lower minimum weights were available by that agency. This cause, as was to be expected, was relatively unimportant among the Rough and Raw Material groups, in which case the tonnage of the shippers who assigned this as a motivating reason for the use of the highway constituted less than 10 percent of total highway tonnage reported by shippers. It was otherwise in the Necessaries group where the responding shippers of that group reported that 50 percent of the tonnage moving by highway used that agency because of lower minimum weights available, and in the Auxiliaries group where they so reported 42 percent of the total. If the same ratio obtains among all shippers there would appear to be over 75 million tons of freight per year which are diverted to the highway upon this account.*

The situation with respect to the cargo shipments can be approximated only in the most general terms. The tonnage of petroleum and its products is second only to coal in volume of total tonnage produced. In 1932, the total crude petroleum produced was 122 million tons, of which the rails handled 3 million, the trunk pipe lines 83 million, and the waterways 29 million tons. Of the 119 million tons of petroleum products produced, the railways handled 47 million, trunk pipe lines 3 million and waterways 53 million tons.#

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* Analysis 40.1.

# Analysis 7.6.

XIII FREIGHT COMMODITY CLASSIFICATION

41. Purpose of Freight Commodity Classifications

Railway

There are over 5 thousand individually named commodities which are given carload rating in Consolidated Freight Classification No. 9. The necessity for classification or the grouping of commodities for ratemaking purposes arises out of the fact that it is indispensable if any differentiation in charges other than for weight, bulk and distance is to be made. That such a differentiation is necessary is quite clear. Measured in gross ton miles (of loaded vehicles only) unprocessed material constituted about 62 percent of the 1932 rail tonnage. The freight charges upon these commodities were relatively lower than the freight charges upon the processed material and even under those circumstances such charges in some cases equaled or exceeded the value of the commodity at origin.* The unit cost of transportation is determined by the quotient obtained by dividing expenditures by the number of units and hence, within limits, depends on volume. If the volume of these unprocessed materials were reduced by rates which discouraged their movement, the cost of moving the processed materials would eventually necessitate higher charges for the latter. To the extent that the increased volume of raw materials, encouraged by the relatively lower rates, results in a lower average cost thereby making possible lower rates on manufactured goods, the practice of charging different rates for the same service is justified. This practice is termed the application of "value of the service" principle.

The need to adjust rates for the purpose of encouraging the maximum volume of profitable traffic is vital. The degree of success with which the problem is solved may in large measure determine the profitability of the enterprise. The very importance of such an adjustment demands that the principles which underlie it be stated and applied openly in relation to actual needs.

Clear and definite rules of classification for this purpose are impossible so long as the endeavor is to integrate, with this value element, cost elements peculiar to each commodity, such as density, risk, and special service. It is possible to state definitely the principles and processes which should be used in classifying commodities in accordance with value. It is equally possible to define clearly the principles which should be controlling in relating rates to costs. The difficulty comes in attempting to apply these differing principles under all manner of variable conditions at one and the same time and in a single process.

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* Measured by line cost per gross ton mile of loaded movement. Analysis 45.17 et seq.

Since this is where the difficulty lies, the first question which arises is whether or not such an integration is in fact necessary. Examination will reveal that the results desired can be attained much more readily and with greater certainty in two steps or processes rather than one.

42. Density Not a Proper Element of Classification

43. Risk Not a Proper Element of Classification

Railway

The factor of risk rarely is included as a separable or distinguishable element in classification, although it has great if not determinative influence. It is a factor, however, which is capable of accurate appraisal. The railways annually report to their national association the amount of their loss and damage payments. Such reports show that for the year 1932 these payments (for carload shipments)* aggregated about 14 1/2 million dollars which is about 0.6 percent of the revenue. This ratio varies among commodity groups from a low of 0.04 percent of the revenue of petroleum and its products to a high of 3 1/4 percent of the revenue of perishables. It is in excess of 1 percent in only 4 out of 24 commodity groups, the 3 groups, in addition to perishables, being live animals, 1 1/4 percent, appliances, machinery and vehicles 1 1/2 percent, and glass and tile 2 1/2 percent. A more accurate relationship is that to value of the commodity hauled. This ratio varies from a high of almost 2 percent in the case of perishables to a low of 0.004 percent in the case of cotton, hay and tobacco.#

Waterway

One of the most important factors on which rail classifications are based, namely, that of value, is generally eliminated by water carriers, by not providing insured transportation, except as to negligence. The owner, in most cases, must arrange for insurance or assume the liability of intransit hazards.

44. Special Service Not a Proper Element of Classification

45. Present Classifications

Shipper

Thirteen percent of the total tonnage and 26 percent of the highway tonnage were reported by shippers who listed the more liberal commodity mixtures available by highway as one factor in their selection of that medium. The business groups in which the factor appears of more than average importance are: Cotton; beverage; vegetable oils, meal and cake; groceries; masonry materials, automotive groups and miscellaneous businesses.*

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* L.c.l. payments were 1.6 percent of the revenue, exhibit 241-2, Merchandise Traffic Report. # Analysis 43.1.

To further determine the customer's attitude with respect to carload mixture requirements, an inquiry was addressed to several thousand shippers throughout the United States. The list included producers, distributors, wholesalers, brokers, retailers, chain stores, mail order houses, public utilities, etc., and ranged all the way from the occasional carload shipper to large concerns shipping a number of carloads daily. Each shipper was asked to list the principal commodities which he shipped outbound in carload lots, and to group those commodities which the commercial needs of his firm required should be consolidated and shipped in a single mixed carload. Some 6,200 replies were received, of which 4,100 reported outbound carload shipments. Of these 4,100 shippers, approximately 2,150 or 52 percent stated that no carload mixtures were necessary. Of the remainder, an analysis of shipper requirements based on the commodity groups listed in analysis 3.3 showed that 58 percent of mixture requirements fall in a single statistical commodity group, such as "grain" or "manufactured foods", while 74 percent of all mixtures are included in a single rating group such as "Raw Materials" or "Necessaries". Likewise, 13 percent of mixture requirements require two rating groups, 7 percent require three rating groups, and the remaining 6 percent require four or five rating groups.

Railway

Broadly speaking there are two kinds of rail classifications now in use, the rate classification and the statistical classification. There are three interstate rate classifications respectively applying in the three Districts - East, South and West. These three classifications have been consolidated in a single volume and under a single commodity list. Varying rules determine the classification which will apply in the case of interterritorial movements. In this consolidated classification there are listed 5,300 carload commodities which are given one or more ratings in each of the three classifications.

Definite and logical rules for the classification of commodities have never been established by the classification committees, the procedure being for each committee independently to assign each commodity to a "class", specifying the minimum weight of the commodity which will be accepted as a carload shipment and stating in detail the type of package in which the commodity may be shipped. Each interested shipper may confer with the committee regarding the regulations imposed on the commodity in which he is interested, which in due course may be modified.

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* Analysis 45.25.

In addition to the rail carriers' classifications developed for rating purposes, the Interstate Commerce Commission for years has required the rail carriers to supply data showing currently the number of carloads and tons of freight originated, terminated, and handled, segregated by specific commodities and commodity groups. Prior to 1928 there were 68 groups of carload commodities, which were then expanded to 156 groups, for which the carriers report total revenue in addition to tons and cars.

The Commission's statistical classification divides all commodities into five groups, namely: Products of Agriculture, Animals and Products, Products of Mines, Products of Forests, Manufactures and Miscellaneous. The first main group embraces 23 individual commodities, 7 groups of two commodities each, and 12 groups of more than two commodities; the second primary group lists 11 individual commodities, 5 groups of two commodities each, and 6 groups of more than two commodities; the third shows 12 individual commodities, 1 group of two commodities, and 5 groups of more than two commodities; the fourth names 7 individual commodities, 1 group of two commodities, and 4 groups of more than two commodities; and the fifth primary group includes 24 individual commodities, 14 groups of two commodities each, and 24 groups of more than two commodities. The last group, No. 701 "Manufactures and Miscellaneous N.O.S." includes more than 1,200 commodities varying from art glass to locomotive arch-bars, baking powder to copper slag, and ice cream to burial cases.

In this classification a number of important commodities such as some non-ferrous metals, house furnishings, some textiles, clothing, and chemicals, are not segregated, while others of slight importance are listed individually. Of the 77 individually named commodities, 50 produced less than 1/4 of 1 percent each of the total tons originated in 1933.

Nearly 40 percent of rail carload freight revenues accrue on shipments which move between two classification territories. This means that for over one third the business, the classification of one territory must be projected into another. To appraise the results of the several classifications individually, therefore, is likely to prove misleading. Taking the country as a whole, an attempt has been made to evaluate the results of the classifications including, of course, "exceptions", "commodity rates" and other departures therefrom. Since analysis with respect to traffic volume, revenues, average load and average haul was limited to the 156 commodities of the Commission's classification, the 5,300 commodities listed in the consolidated rate classification were first distributed among these 156 statistical commodities. For each of the rate commodities, the density, value, where possible the average, and physical maximum load were obtained, and entire information summarized for each of the statistical commodities. These 156 groups were next reduced to 53 primary groups, cognate from the commercial and utility standpoint. These primary groups then were arranged into 6 general divisions or groups in accordance with their stage of processing applicable to the commodities within the primary group, namely: (1) Rough Material; (2) Raw Material; (3) Semiprocessed Material; (4) Necessaries; (5) Auxiliaries; and (6) Accessories.*

In connection with the traffic analysis of the survey, it was possible to obtain the average load, haul, and revenue per net ton of each of the 156 statistical commodities and by correlation, the 53 groups. The terminal revenue per ton, which was assumed to be the quotient obtained by dividing twice the average cost of originating and terminating a carload of traffic by the average ratio of freight cost to freight revenue, was deducted from the total revenue per ton to obtain the line-haul revenue. To equate the differences in average load per car, it was necessary to adopt as a common denominator in which to express the line-haul cost per mile a unit, called "equated ton-mile," which is the movement of the gross weight of the loaded car and contents one mile. The result reveals the amount which the carriers received for the transportation effort of the loaded haul necessary in the case of each group.

The results of the foregoing study are shown in analyses 45.17 to 45.22, inclusive, and similar studies with respect to each classification territory, in analyses 45.23 and 45.24.

The line revenue per equated ton mile of Rough Material averages 1.9 mills; of Raw Material, 3.7 mills; of Semiprocessed Material, 4.3 mills; of Necessaries, 4.3 mills;# of Auxiliaries, 5.5 mills; and of Accessories, 6.2 mills.

Line revenues per equated ton mile of all commodities are 4.15 mills for the country as a whole; 4.5 mills in the East; 3.4 mills in Pocahontas; 4.1 mills in the South; and 3.9 mills in the West. The Eastern District revenues are the highest of all territories in the case of Rough, Raw and Semiprocessed Materials; those of the South in the case of Necessaries and Auxiliaries; those of the West only in the case of Accessories. Pocahontas revenues per equated ton mile are lowest of all

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* The reconciliation of this classification with the Commission's statistical classification is shown in analysis 1.10. Allocation of specific commodities to the 53 primary groups appears in the Appendix.

# If group 44, processed cereals, be transferred and included with grain as appears proper in view of present transit adjustment, the average of Necessaries rises to 4.8 mills.

territories in the case of coal and other Raw Material, Necessaries, and Auxiliaries. Southern revenues are relatively the lowest in the case of Semiprocessed Material and Western revenues in the case of Rough Material.*

Waterway In spite of certain basic differences in water and rail transportation, water common carriers, as a rule, have adopted the classification of rail carriers, but have modified it to fit the needs of waterborne traffic for port-to-port business. Contract carriers moving bulk commodities rarely use any classification.

46. Suggested Classification

General The following illustrates the method of determining ratings of the primary commodity groups. Assume that an average rate for the average haul in the United States of 6 1/4 mills per equated ton mile (car and contents) is necessary to produce a fair profit upon the available traffic. Assume also that the out-of-pocket cost ratio is 50 percent (3 1/8 mills) and the cost of performing the service by owner truck 12 1/2 mills per equated ton mile. Assume further that Rough Material constitutes 5 percent of the available equated ton mileage; Raw Material, 60 percent; Semiprocessed Material, 5 percent; Necessaries, 5 percent; Auxiliaries, 15 percent; and Accessories, 10 percent. One system of rating which would produce the average rate for the average haul of all traffic would be ratings bearing the following "percentage relations" to the average cost: Rough Material 60 percent (3 3/4 mills); Raw Material 80 percent (5 mills); Semiprocessed Material 90 percent (5 5/8 mills); Necessaries 100 percent (6 1/4 mills); Auxiliaries 150 percent (9 3/8 mills); and Accessories 180 percent (11 1/4 mills). These rates multiplied by the respective equated ton mileage will produce the average 6 1/4 mills and at the same time are within the minimum and maximum limits. Other combinations, of course, are possible.

The range in the above ratings may appear comparatively narrow. It is not materially different, however, from that of the present equated ton mile line revenues,# where the lowest was 1 mill on pulpwood and the highest 8 mills on slab aluminum and tobacco - a range (using the average 4 mills as a base, 100) of from 25 to 200 percent. If the three commodities mentioned are omitted, the general range is from 2 to 6 3/4 mills or 50 percent to 170 percent.ø

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* Analysis 45.23.

# Analyses 45.17 et seq.

ø Sugar beets and ice which show practically no line revenue, and explosives which yield exceptionally high revenue due to their dangerous nature, are not considered in this discussion.

The question of district or territorial classifications has assumed a major importance in the past which does not appear to be warranted by the facts developed in the survey. From these facts it appears that (1) 40 percent of the revenue is derived from cars moving from one classification district to another; and (2) with several important exceptions, there does not appear to be much difference in the revenue results of the three classifications.*

The argument for different classifications, however necessary, is predicated upon the assumption that commodity distributions among the three districts vary widely. It should be premised that in the system of classification under discussion, questions of loading, haul, risk, as well as level of the rate themselves, all are eliminated. "Value of the service" being the sole criterion, a difference in ratings will be justified only if there is a difference in the distribution of traffic which is likely to make necessary a different relationship in the ratings, since any difference in rate levels can be adjusted in the rate system itself.

There is not the difference in the distribution of traffic which quite generally is assumed to exist. Because of the peculiar conditions in Pocahontas Territory, traffic of carriers therein is shown separately.# Dealing first with the revenues of the six commodity groups, it is seen that Rough Material contributes 2 percent of the revenue in the East, 1 percent in Pocahontas, and 4 percent in the South and West; Raw Material produces 51 percent in the East, 52 percent in the South, 49 percent in the West, and 84 percent in Pocahontas; Semiprocessed Material produces 5 percent in the East and West, 6 percent in the South, and 2 percent in Pocahontas; Necessaries produce 13 percent in the East and South, 14 percent in the West, and 4 percent in Pocahontas; Auxiliaries produce 21 percent in the South, 22 percent in the East, 23 percent in the West, and 7 percent in Pocahontas; Accessories produce 8 percent in the East, 4 percent in the South, 5 percent in the West, and 2 percent in Pocahontas. With the exception only of Pocahontas and owing to conditions which would not be affected in any material degree by classification, the distribution of the revenues of traffic is almost identical in the three districts. Almost exactly the same conditions exist with respect to the distribution of net ton miles of traffic.

In view of the foregoing facts and the further fact that about 40 percent of the total revenue is derived from interdistrict traffic, there would appear to be no need to continue three separate rating systems unless as we shall presently inquire, there are cost considerations which require it.

The process of changing the classification should be an orderly one. The first and most important step is an objective classification of commodities, first, into primary groups of similar nature and utility; and then in the general "rating groups" which at the beginning probably should number many more than eventually will be found necessary over a period of years. As shown by analysis of 1932 revenues there are a large number of commodities which could be readily aggregated into homogeneous groups without disturbing present relative levels. The others should be treated initially as exceptions to the rating and changed gradually as the occasion or demand therefor arises.

XIV PRICE LEVEL

47. Definition of Price Levels

48. Carrier Price Levels

49. Commodity Price Levels

Shipper

Data furnished by shippers with respect to typical movements by rail and highway, respectively, made it possible to compare the average level of charges paid by the two transport agencies. The comparisons furnished by the shippers were individual averages with no indication of volume moving by either agency. In summarizing, therefore, simple and not weighted averages of charges per ton were all that were available. The average charges per ton and per ton mile are higher in many cases than those which actually apply. The averages may not be indicative of the present levels as such, but since they are strictly comparable in all respects, they are indicative of the relative charges of the two agencies, provided of course that the data furnished by the shippers is fairly typical. The data has been classified by commodities, by length of haul, and by size of load.

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* Using the United States average as a base 100 percent, the average line revenues from all commodities in 1932 were: East 108 percent, South 99 percent, West 95 percent, Pocahontas 82 percent. Of Raw Material: East 109 percent, South and West 96 percent, Pocahontas 88 percent. Semiprocessed Material: East 111 percent, South 88 percent, West 92 percent, Pocahontas 97 percent; Necessaries: East 104 percent, South 110 percent, Pocahontas 99 percent, West 93 percent. Auxiliaries: East 102 percent, South 111 percent, Pocahontas 96 percent, West 94 percent. Accessories: East 94 percent, South 107 percent, Pocahontas 97 percent, West 110 percent. Analysis 45.23.

# Analysis 45.24.

The average haul of all commodities was 221 miles; the average highway charge per ton $6.56; and the rail, $7.89. The transport charges per ton mile were highway 3 cents; rail 3.6 cents; and if drayage, packing, etc., be included, 3 1/2 cents and 4 2/5 cents respectively.*

There are 3 business groups in which the rail transport charges were lower than the highway (sand, stone and gravel; coal and coke; furniture and furnishings) in 1 (sugar, sirup, etc.) the charges were the same, but in the remaining 39 groups the highway was lower. In every case the total charge (including packing and drayage) was higher by rail. An illustration of the effect of these factors appears in the furniture group where the transportation charge by highway was 5 cents per ton mile; by rail, 4 cents per ton mile; whereas the total charge per ton mile was 6 cents by highway and 8 cents by rail.*

Railway

The revenue per net ton mile of the several commodities by districts is shown in analysis 43.8. From this analysis it is apparent that with respect to the commodity earnings there is little difference if the Pocahontas Carriers be excluded. In the Rough Material group the earnings of the three districts (excluding Pocahontas) are closely similar. In the Raw Material group (average about 9 mills) the same situation appears except that grain, fresh vegetables and dry fuels are higher in the West, and lumber and crude liquids (chiefly crude petroleum) lower. In the Semiprocessed Material (average about 12 mills) there are no wide disparities. Among the Necessaries (average about 13 mills) the earnings are also quite similar - the South being uniformly slightly higher and the West slightly lower than the East. Among the Auxiliaries (average about 14 mills) the chief disparity lies in gasoline where the average in the West is 13 mills, in the East 19 mills and in the South 19 1/2 mills. With respect to the Accessories (average about 17 mills) the East is about 10 percent less than the South and West - the East maintaining higher rates on the metals but lower rates on machinery, vehicles and the like.

Waterway

The average water common carrier ton-mile revenue (using equivalent rail haul to measure the miles) in 1932 was 5.6 mills.# Separated by carrier groups, the Atlantic Coastwise Operators received 14 mills;

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* Analysis 49.1.

# To compare the relative amount which the shipper pays for the two services it was necessary to reduce the water service to the same denominator as the rail - that is the water aggregate charges were divided by the number of ton miles which would have been necessary if the shipments had moved by the direct rail routes. Analysis 49.4.

the Atlantic Gulf Operators 4.9 mills; the Intercoastal Carriers 3.9 mills; the Inland Waterways 5.8 mills; the Great Lake Carriers 6.5 mills; and the Pacific Coastwise Carriers 9.2 mills.* It was not feasible to analyze these earnings by commodities.

Petroleum

The average pipe line revenue per ton mile of crude petroleum was 6.6 mills and for gasoline 11 mills.* One of the distinguishing characteristics of petroleum traffic is that the bulk of the transportation service is performed by the owner of the commodity either directly or through subsidiary pipe lines, or by subsidiary carriers or contract carrier steamship facilities. Only in the case of gathering pipe lines is there a substantial volume of traffic transported for persons other than the owners of the carrier facilities.

From a tonnage standpoint, the companies serving only proprietary refineries handled 8 1/2 percent of the total crude petroleum traffic handled by pipe lines; while the pipe lines serving non-proprietary refineries as well as proprietary refineries transported 75 percent of the total traffic of which 78 percent was proprietary traffic.#

Any carrier seeking to engage in the transportation of crude petroleum traffic must be prepared to offer a service at a charge which is comparable with the cost to the owner of transporting the traffic either by its own pipe lines or marine tankers, or by those operated by closely integrated subsidiary carriers.

The average cost of transportation by pipe line is far below the level of charges of railway carriers.ø The result has been to concentrate not only the refining of petroleum and the distribution of refined petroleum products, but also the control of the production itself into relatively few hands, since the capital outlay required to construct extensive trunk pipe line facilities or provide marine tankers is inexpedient in most cases unless the pipe line is assured of large and steady flow of traffic by close affiliation with the companies owning the petroleum, usually the refining companies.

Crude petroleum in 1932 produced for the railroads revenue of 8 mills per net ton mile and refined petroleum 15 mills per net ton mile.≠ The average net ton-mile earnings of all rail traffic in 1932 was 10 1/2 mills.*

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* Analysis 49.4. # Analysis 49.20.

ø See analyses 75.1, 45.18, 45.21.

≠ Analyses 45.18 and 45.21 (Revenue per net ton divided by average haul).

The lowest rate of earnings came from coal and coke for which average rates were about 7 mills per ton mile, and ores which were about 8 mills.* Crude petroleum with an average value of approximately $6 per ton paid 3 1/4 mills per equated ton mile, almost the same as the rate of bituminous coal at a very much lower value per ton.* Refined petroleum, however, with a value of $27 per ton produced rail revenue, exclusive of terminal revenue, of 6 1/4 mills per equated ton mile, which was relatively higher than most other commodities embraced within the same character of traffic.# The published rates of railways for the transportation of crude petroleum are relatively much higher than the published rates of petroleum pipe lines. Analysis of the rates applicable to a large number of competitive movements, embracing many important movements of crude petroleum, shows that the rail rates are a little more than twice the average pipe line rate. Generally slight attempt has been made by railways to meet the pipe line rates on crude petroleum, although there are noteworthy exceptions to this statement. Railways ordinarily transport crude petroleum from newly opened fields and expect the traffic to be taken away from them by the construction of pipe lines. In view of the fact that the average earnings of the present crude petroleum rail rates produce less than the average of all traffic and that the earnings which would be earned if the rates were reduced to the pipe line level would be less than that upon any other traffic handled, it would appear that the action of the railways in surrendering the crude petroleum traffic to the pipe lines is justified, unless the cargo practices and rates are substituted for the present carlot methods and rates.

The situation with respect to rates on gasoline and refined petroleum oils is quite different. For many years the railways have enjoyed a substantial volume of gasoline traffic although, as stated in an earlier connection, the volume handled by them is considerably less than that handled by water. This traffic by rail is rapidly becoming more vulnerable, due to several important developments in the industry - first, the location of refineries in centers of distribution and their connection with the fields by pipe line have reduced the length of haul of the refined product; second, the development of the movement of gasoline by tank motor trucks, which already has been mentioned, has contributed to the diminution of the traffic; and third, the development of the inland waterways has diverted additional traffic from rail carriers; and finally, the latest condition, and one which is the most serious menace from the railways' standpoint, is the construction of gasoline pipe lines and the adaption of several crude oil pipe lines for use as gasoline pipe lines. The largest gasoline pipe lines have been constructed from the Midcontinent field to tank farms located in the Central West and also from refineries at certain Atlantic Coast ports to interior distributing points. The rates which apply via the gasoline pipe lines from the Midcontinent district are approximately the same as rail rates. This does not state the entire fact, however, because the bulk of the gasoline handled by these lines is transported for proprietary refining companies, and the true measure is not the published rate, but the cost of transporting the gasoline. In the East, gasoline rates from the Seaboard refineries to interior distributing centers are less than half the comparable rail rates.

50. Effect of Present Price Level

Shipper

The shippers and receivers of 25 percent of the total tonnage and 62 percent of the tonnage moving by highway reported that the lower price of highway transportation was a determinative influence in its selection in preference to rail transport. Of the total tonnage, shippers assigning price as a determinative factor shipped or received 93 percent of the tonnage of packing houses; 86 percent of the bakeries; 69 percent of automotive businesses; 58 percent of paper businesses; 52 percent of non-ferrous metal industry; 49 percent of beverages and liquors; 44 percent of cotton industry; 41 percent of books and periodicals tonnage; 39 percent of that of groceries; 35 percent of canned goods; and 33 percent of each of the petroleum and iron and steel articles industries. These shippers also reported that 14 percent of their tonnage moved by truck. Conspicuous illustrations were: Beverages, 48 percent; canned goods, 22 percent; groceries, 38 percent; textiles, 15 percent; and miscellaneous businesses, 20 percent.*

51. Modern Price Level

Railway

The following illustrates the method of determining the carrier level for the United States as a whole. Assume that the total operating costs (including rents, taxes, and all freight expenses) for a typical period, average 3 1/4 billion dollars, that the amount necessary adequately to service capital employed in freight service is 1 billion dollars, which means that the revenues needed are 4 1/4 billion dollars (the operative cost ratio about 75 percent), and equated ton miles are 800 billion; in the case assumed, the rate level per equated ton mile would be 5 1/3 mills.# This

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* Analysis 45.18. # Analysis 45.21.

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* Analysis 50.1.

# Under the illustration used, if the passenger deficit in operations and capital service be included, the cost would rise to about 6 mills.

represents the average revenue per equated ton mile which all the traffic must produce to provide a profitable transport system under the conditions assumed. It is now ready to be apportioned among the several rating groups in the manner described in section 46.

XV PRICE STRUCTURE

52. Definition of Price Structure

53. Carrier Price Structures

Railway

There is quite a widespread belief that marked differences exist in the carrier rate levels of the four principal carrier groups. The facts developed fail to warrant any such conclusion. Eliminating from consideration the Pocahontas group of carriers, the revenues per net ton mile are, as have already been shown, East 10 6/10 mills, South 10 6/10 mills and West 11 3/10 mills.* Expressing the relationship of the carriers to the group which has the lowest revenue per net ton mile, we have: The South 100 percent; East 100 percent; and West 107 percent; a maximum difference of 7 percent.

54. Commodity Structures

55. Effect of Present Price Structures

General

From a practical standpoint, the extent to which an unplanned and unscientific price scale is driving from the rails to the highways traffic which from a cost standpoint can be more advantageously handled by the railway is shown in analyses 49.7 to 49.14, inclusive.

56. A Modern Rate Structure

General

The common assumption that transportation costs cannot be ascertained with sufficient accuracy to permit cost pricing is due to two things - the indisputable fact that the operations, particularly those of railways, are primarily joint and require elaborate separation to ascertain the costs of particular services, and second, the fact that progress in carrier accounting heretofore has been along function rather than location and service principles. At a later stage of the report,# questions dealing with modifications of the accounting and statistical systems necessary to produce reasonably accurate transportation unit costs will be discussed. All that is necessary at this time is to point out that such costs may be made available with but slight changes in present statistical procedure.

The effect of the characteristics of weight and distance jointly on line costs is measured by the gross ton miles required for the movement of the shipment. Superficially, it would seem necessary to base their equation upon a sum which includes the gross ton miles of any empty haul incident to the loaded movement. Carried to its logical conclusion, however, this would mean that the cost of hauling a shipment would depend on a factor with which its characteristics have nothing to do - to wit, the place where the return load, if any, is found. It is reasonably safe to prophesy that a tank car will have a 100 percent empty return haul. From the reasonable certainty of this conclusion, one passes through constantly lessening degrees of certainty with respect to hoppers, gondolas, livestock, refrigerators, flat and box cars, at which point complete uncertainty is reached. The ratio of loaded to empty cars in each of these classes not only may vary in different parts of a haul covered by a single through route, but it is also difficult to assign commodities definitely and positively to particular types of equipment. Further, an appreciable part of the empty mileage is the result of the present system of car ownership by individual railroads and could be eliminated by the establishment of a pool.

On the whole, therefore, with the possible exception of cars definitely assigned to a particular traffic such as tank cars, the fairest rule would appear to be to let the empty mileage follow the loaded mileage by using as the cost unit "equated ton miles", as herein defined, i.e., the gross ton miles of the loaded car and its contents.

The effect on the terminal costs of these characteristics are limited to weight, the distance moved within the terminal being one of relatively minor importance, and the cost for a shorter distance through a congested area frequently exceeding that of a longer distance through an area of little traffic.

This leads to the adoption of the "equated ton" as the terminal cost unit and the "equated ton mile" as the line cost unit. Translation of these operative cost units into rate factors is accomplished through expansion by an operative cost ratio sufficient to make the carrier operations profitable as a whole. These rate factors represent the base or carrier levels. They are converted into commodity rate factors by applying to them the percentage rating factors of each classification grouping.

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* Analysis 45.24.

# Section 67.

These costs are expressed in gross weight units. Translation into net weight units can be accomplished by expanding the gross weight unit cost by the ratio of the net load (for which a scale is desired) to the gross load (net plus tare weight). A final step is the construction of the scale by adding a fixed terminal rate to a line rate varying with the distance.*

Differences due to volume (volume loading) are evaluated by constructing different scales of rates which vary with the size of the load. Thus, if the cost per equated ton of a given movement is $1, the cost of a movement of 10 net tons in a vehicle having a tare weight of 20 tons will be $30 per car or $3 per net ton, and the cost of moving 50 net tons in the same car will be $70 per car or $1.40 per ton. This would mean a scale of net weight rates for each size load varying in some cases perhaps from 1 to 60 or more tons. The effect of this system is that all shippers pay the same base price per car (or container) for the movement plus the same rate for each net ton handled therein. The result would be that no shipment, however small, would be discouraged by a penalty charge, but on the other hand, maximum rather than minimum loading would be encouraged. If the equipment were confined to present types such a system would tend to make it difficult for small shippers to compete with larger ones. When the container is introduced, however, the maximum sales unit (12 1/2 tons per container) generally would be less than the average present minimum sales unit.

XVI TARIFFS

57. Purpose Served by Tariffs

58. Present Tariffs

Waterway Due to the absence of uniform and comprehensive regulation of the water transportation industry, there is no uniformity of tariffs of water carriers between trades. Contract carriers rarely have any tariffs at all. Eight common carriers in the Atlantic Coast territory are directly or indirectly owned or controlled by rail carriers. These companies are subject to the Interstate Commerce Act and publish tariffs in accordance with the rules established by the Interstate Commerce Commission. Some common carriers operate through services with rail connections and publish tariffs comparable with those of rail lines. In some services, conferences have been formed from time to time in an attempt to bring about stability. These conferences, however, have been of varying durations, have rarely included all carriers engaged in the particular trade, and have never obtained complete adherence to uniformity in rates, practices, and tariffs.

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* Equation should be made for the fact that the average distance traveled is 11 percent in excess of the direct distance; Analysis 71.1.

Petroleum Petroleum pipe line tariffs are much simpler and less pretentious documents than their inspirations and preceptors - railway freight tariffs. Pipe line tariffs fall into several more or less distinct classes:

(1) Tariffs naming rates, rules and regulations for trunk line movements of crude petroleum, refined petroleum products, or both crude and refined commodities;

(2) Tariffs naming rates, rules and regulation for gathering services;

(3) Tariffs naming charges, rules and regulations naming charges for special or terminal services, such as storage, demurrage, loading or pumping into tank cars or vessels, transfer, and transit services such as blending-in-transit; and,

(4) Tariff indices listing tariff publications.

In some cases, single tariffs contain the rates and charges for trunk line, gathering line, and special and terminal services; but in other instances, separate tariff publications are used as the media for the official dissemination of information with respect to the several types of services.

It is noteworthy that no agency tariffs are published in petroleum pipe line transportation by a single tariff publishing agent, authorized, by appropriate powers of attorney and concurrences, to act as the tariff publishing agent for several or a number of carriers. This is quite unlike the wide use of tariff publishing agencies in the field of railroad transportation. Furthermore, no traffic associations, which publish agency tariffs in many cases for member and concurring railroads through their respective tariff bureaus, exist to perform this function for pipe lines. Explanations of these phenomena are found, doubtless, in the highly individualistic character of the pipe lines and the close affiliation of many pipe lines with the proprietary petroleum refining companies. Although many of the pipe line tariffs are individual local tariffs, there are numerous joint tariffs published by one line and concurred in by one or several connecting pipe lines.

The pipe lines engaged in interstate commerce are subject to the provisions of Section 6 of the Interstate Commerce Act requiring common carriers to publish and file their tariffs.

Evidence of the concurrence of participating carriers in joint tariffs is required of pipe line as well as of rail carriers. Changes in tariff rates and charges may be made only upon statutory notice, except as special permission to file upon less than statutory notice is granted by the Interstate Commerce Commission. The Commission may, moreover, suspend the effective dates of pipe line tariffs at its discretion either upon complaint or upon its own motion, as it may in connection with the tariffs of all types of interstate carriers subject to its jurisdiction. There are similar but not identical regulations of State regulatory commissions in a number of States requiring the pipe line companies to publish rates.

The rules and regulations of pipe line companies are not uniform, so that generalization is difficult, and apt to be dangerous if interpreted too literally as a complete codification of pipe line rules and regulations.

The regulations of a typical crude petroleum tariff can be divided into eight types of provisions pertaining respectively to:

(1) Marketability or merchantability of the oil;

(2) The quantity of the oil and apportionment of service among concurrent tenders;

(3) Transportation of oil involved in litigation or subject to liens for charges;

(4) Satisfactory evidence that the consignee is able to accept delivery promptly;

(5) Statement of the rates in U. S. Government barrels of 42 gallons at 60 degrees temperature, Fahrenheit, minimum tender requirements, carrier lien for charges, and advance or prepayment of charges;

(6) Charges for special and terminal services, including: Gathering services, storage, demurrage, transfer, blending-in-transit, and loading;

(7) Storage incident and necessary to the transportation furnished without extra charge for a limited period, usually five days;

(8) Liability of the carrier limited, in the absence of negligence, to exclude liability for loss, damage or delay caused by an act of God, fire, flood, riot, insurrection, rebellion, war, act of the public enemy, quarantine, authority of law, or act or default of the shipper or owner.

Gathering pipe line tariffs provide rates and rules and regulations applicable to the gathering of the petroleum at the wells, the movement to the concentration points, and the storage at the concentration points. Storage charges are assessed upon the basis of the daily balance of oil held in storage. Percentage deductions, usually higher than the deductions made in case of trunk pipe line transportation, are provided to be deducted for evaporation and waste from the total quantity of oil gathered, and further deductions of a fraction of one percent for each degree are provided for in case the oil is heated above the cold temperature of oil in the same vicinity on the date of acceptance.

A special type of transportation service which is neither gathering line nor trunk line service is sometimes provided by pipe line companies in transferring petroleum short distances between the storage tanks of industries or between the industrial storage tanks and tanks at junctions of connecting pipe lines.

Highway

Highway freight operations, having but recently become a factor in transportation and being subject to limited and localized regulation as to rates and charges, have not developed a uniform system of tariffs. In some instances tariffs of rail carriers have been adopted with modifications to suit specific situations; in a number of States regulatory bodies prescribe the form and bases of tariffs covering intrastate operations; but as a general rule highway common carriers issue and use tariffs, rate cards, and circulars covering individual operations only Highway contract carriers generally treat each transaction as a separate matter and so do not use printed tariffs.

59. Defects

60. Modernization

XVII STATISTICAL ANALYSES

61. Necessity for Uniform Statistical Analyses

General Adequately to budget expenses for the future, management must know not only how much was spent in the past for a given service, but the extent of the service which that expenditure provided; the location of the expenditure; and the conditions with respect to location, service and operation which made the expenditure necessary. It must also know the result of expenditures under each of many different sets of conditions, and more important still, it must know the service which it will be called upon to render during the period for which the budget is prepared. To obtain this information, an accurate appraisal of unit costs from a location and service, as well as from a function standpoint, is necessary.

The advent of new transportation facilities, and the demand for improved service, require also that management be acquainted in detail with the cost and effect of various operations and of personnel responsible for them. It must have at hand data from which it can establish norms: For the purchase of labor and material; for the performance of service; and to measure the relative efficiency of officers or of personnel groups, and also of different methods or facilities or different agencies. To make such comparisons it is necessary that expenditures be expressed in units of service and traffic.

The need for statistical analyses of operations increases with the area of the operations. Where these operations are limited, relatively fewer statistics are required than where they extend over wide areas. Consolidations or other forms of unification increase the demands upon management for supervision, and bring about still greater need for statistical data upon which to base supervisory activities.

The newly developed ability of the shipper to provide his own transportation is tending to make cost of service a factor of prime importance in its pricing. For this purpose rough approximation no longer suffices. To price its transportation the carrier must analyze and appraise every factor which affects its own service and costs, and also the service and costs of competitors, including in the latter category the shipper himself. Unremitting study to improve the service and at the same time to reduce the expense of rendering it is demanded.

Because of the oversupply of transport facilities, and of the destructive competition and strife between the various forms of transportation, it is necessary for regulatory bodies, as well as the carriers themselves, continually to measure and appraise the relative utility of every form of transport agency from both a service and a cost standpoint. To make such an appraisal, statistics of service, traffic and cost, are essential.

62. Factors of Operative Utility

63. Criteria of Operative Utility

64. Present Accounting Practices

Railway The accounts of railway carriers are kept currently in accordance with a classification prescribed by the Interstate Commerce Commission, which is the outgrowth of carrier experience over a long period of years. In its fundamental aspects this classification followed those which had been used by the more progressive railways for some years prior to its prescription. Its working is now understood by thousands of accountants, statisticians and investors in and out of the railway field. Any radical changes in the classification, therefore, would have serious repercussions in fields far beyond those of mere railway accounting.

The Commission has prescribed for rail carriers three classifications of accounts: A classification of investment in road and equipment accounts; a classification of operating revenue and expense accounts; and a classification of income, profit and loss, and general balance sheet accounts. The underlying survey dealt principally with the classification of operating expenses, and in a small measure with the classification of income accounts. Operating expenses of carriers are grouped in eight general categories: I Maintenance of Way and Structures; II Maintenance of Equipment; III Traffic; IV Transportation Rail Line; V Transportation Water Line; VI Miscellaneous Operations; VII General; and VIII Transportation for Investment Credit.

The Commission requires the carriers to separate, directly where possible, otherwise by apportionment, the expense of conducting passenger business from that of conducting freight business. It is with the latter accounts only that this report deals.

65. Present Carrier Statistics

Railway

The Commission requires the carriers to report annually the following statistics of rail line operations, separately for freight and passenger services: Train miles, locomotive miles subdivided for train switching and yard switching; freight car miles, loaded and empty; mixed train freight car miles, loaded and empty; and tons and ton miles of revenue and nonrevenue freight.

The carriers also report the following statistical averages: Freight train miles and freight locomotive miles; freight car miles (loaded and empty) per mile of road; freight ton miles, revenue and total; and freight car miles, loaded and empty, per freight train mile; and freight ton miles, revenue and total, per freight car mile.

The carriers are required to report annually by systems the following traffic statistics: Cars, tons and revenue freight carried by the 156 commodity groups of the Commission's freight commodity classification; and cars and tons (but not revenue) of each commodity originated and terminated, originated and delivered to connections, received from connections and terminated, and received from and delivered to connections.

In many cases, although not required to be so reported, these statistics for their own convenience are localized to smaller segments of the reporting carrier, such as operating or accounting divisions.

66. Modern Statistical System

General

To furnish the information described in The Report will require correlation of the following data with respect to transport activities and costs: (1) Personnel responsible; (2) kind, type and quantity of labor, service or materials acquired or applied; (3) carrier and geographic location; (4) facility, individual and type to which the application is made; and (5) the service in which it is incurred, both generally and particularly.

These objectives can be obtained without disturbance of the present classification of accounts by earmarking expenditures at the time of original entry with respect to the matters enumerated above, and contemporaneously correlating them with primary traffic and operative service units similarly localized.

The purposes of this correlation would be: (1) to localize all services and directly allocate many expenditures which at present must be apportioned statistically, if a cost study is to be made; and (2) to furnish data by which joint costs can be apportioned accurately between locations, facilities or services by using the service factors, such as train miles, gross ton miles, locomotive ton miles and the like, which apply at the particular location or in the particular service, instead of system wide average factors such as are now necessary.

Throughout carrier organizations, time of officers and men is employed in compiling statistics relating to particular fields or activities and for many different purposes. It is difficult, if not impossible, to summarize the resultant statistics. Under the system suggested, each debit item (voucher, payroll, journal entry, etc.) would be analyzed and mechanically recorded on tabulating cards in such form as to permit subsequent tabulation, if, as and when required from every standpoint. Such records would contain full accounting as well as statistical data, resulting in complete harmony of accounts and statistics at all times. The total expense of keeping accounts in this manner should be less than the present cost. While the expense of accounting might be increased, this increase would be offset by the elimination of much statistical work in the other departments and the avoidance of duplicate work thereby entailed, not only in compiling present statistics, but in attempting to reconcile them with one another or with the accounts.

XVIII CARRIER INQUIRIES

67. Statistics Used in Carrier Inquiries

Railway

In response to the rail carrier inquiry, in addition to the statistics required by the Commission, the carriers furnished the ton miles and the revenue of each of 156 commodities, subdivided between local, interline originated or terminated, and overhead or intermediate traffic.

Where the information was not readily available for the entire year, a waybill reanalysis was made for a typical month and the actual 1932 revenue for the year of each commodity distributed to car miles and ton miles, respectively, upon the bases of the average revenue of such commodity per car mile and per ton mile, during the typical month.

The actual ton miles of all commodities for the year were checked against the total ton miles aggregated by commodities and special studies made in any case where there was not substantial agreement.

Carriers also furnished statements showing the distribution of commodities (in cars) among different classes of terminal service in each of the terminal districts. To bring the study within reasonable limits, the 156 commodities were grouped into 24 groups, which are shown in analyses 1.9 and 1.10. The actual number of cars of each commodity handled during 1932 were distributed in accordance with the results of two test weeks, one in each month of the year in which the carrier received its maximum and its minimum traffic. The total number of cars obtained in this manner for each terminal district was reconciled with the total number of cars actually terminated in that district, whenever there was substantial variance, by special study.

Carriers segregated their system, operative and traffic statistics, (which are furnished the Commission annually) with respect to individual operating districts, thereby making it possible to compute average unit costs for such operating district, since expenses were likewise segregated into such districts.

Carriers also furnished statements showing in detail the loaded and empty cars interchanged by them during the year 1932 by carriers, junctions and directions; the number of carloads and consignments received and forwarded at each station during 1932, and (by use of test periods) the track service by classes of tracks in each district.

Finally, carriers traced from point of origin to point of destination, car by car, all carloads which were terminated on a single day - December 13, 1933 - reporting with respect to each car its origin and track service, destination and track service, commodity, weight, charges, number of reconsignments and interchanges, car miles, ton miles, and elapsed days spent in each terminal and on the road while en route.

Waterway

The questionnaires sent to water carriers were designed to secure from each respondent the regular as well as irregular services operated; the total mileage of voyage, the days consumed on voyage, the ports or cities served in order and the frequency of service, all separated as to outward and inward voyage; the period or season, if service was seasonal; and whether owned offices or agents were used at each port.

The ten principal commodities handled during 1932 were requested for each service, shown separately for outward and inward voyage, and the percent that each such commodity was of the total tonnage handled on the respective movements. The total l.c.l. traffic handled on each service was shown as the eleventh commodity.

Total tonnage by services, l.c.l. traffic by services, and the approximate percent of capacity to which units were loaded, separately, for outward and inward movements, were reported for the five years 1928 through 1932.

The average revenue per ton on all traffic, the average revenue per ton on port-to-port traffic, and the average revenue per ton accruing to water carriers on through traffic were reported for each service operated, separately, both outward and inward, for the year 1932.

Tons handled and average revenue per ton, outward and inward for each service, of express traffic, for the year 1932, were also obtained. Mail pay received in 1932 for each service, outward and inward, was reported.

Highway

Replies to the Coordinator's motor truck inquiry were received from 503 operators in 40 States, unit cost data being furnished on approximately 18,500 vehicles. Of the 503 replies, 285 were from private users, 162 from independent for-hire operators, 18 from railways owning and operating trucks, while 38 were unclassified. The vehicles ranged from small half-ton delivery units to trailer combinations having a gross weight throughout annual mileage of about 65,000 pounds, being operated individually and in fleets comprising up to 3,761 vehicles. On the whole, the sample is geographically representative of motor truck distribution, although it is heavily dominated by fleet conditions.

The information furnished by operators was supplemented by additional data from the U. S. Bureau of Public Roads, U. S. Department of Commerce, Highway Research Board of the National Research Council, Iowa State College Engineering Experiment Station bulletins, Society of Automotive Engineers handbook, Markel Service, Inc., and truck manufacturers.

In a field survey covering large and representative terminal trucking operations in a number of cities, cost and performance statistics were supplied in considerable detail by the individual operators.

68. Unit Costs Used in Carrier Inquiries

Railway

The carriers were asked to deal with their 1932 accounts by accounting divisions, that is, the smallest segment in which their system was subdivided for disbursement accounting. Supervisory accounts (not including traffic or general expense) of each general function group (maintenance of way and structures, maintenance of equipment and transportation) were then ratably surcharged upon the primary direct accounts in each group.

The first problem was to group the operating characteristics common to shipments in varying degrees between those in which distance was a factor (line operations) and those in which it was not (terminal operations). This localization can be made most conveniently in two steps - first between road and yard operations, and second, between yard operations in line service and those in terminal service.

Many of the primary accounts were directly localized between road and yard. The remaining primary accounts were grouped into 13 groups, cognate in the sense that where common to two or more locations or services they could be and were apportioned upon the basis of the same "use factors". The basis of this apportionment is described in detail in the analyses and exhibits. Generally speaking the common way expenses (relatively small) were apportioned upon the basis of the direct accounts; the maintenance of power upon the basis of locomotive miles.

Distribution of car maintenance between road and yard presented a more difficult problem. As yet data revealing the relative user damage to cars in road and yard service is extremely meager. It is certain that car miles do not adequately reflect this use. The weight of informed opinion seems to be that as between road and yard, a per diem basis, though confessedly inadequate, is the best criterion available and, therefore, that basis was used in the inquiry.

A refinement of the per diem basis has been suggested which has much merit. It is that the expense of depreciation and retirements be apportioned wholly upon a full per diem basis insofar as they are occasioned by use upon a carrier possession time basis, i.e., eliminating the time the car was in the possession of the patron being loaded or unloaded.*

The 13 road accounts thus segregated were further grouped with respect to 6 general functions and distributed among operating divisions on the following bases: Road maintenance - gross ton miles; car maintenance - loaded car days; road transportation and the road proportion of station maintenance and operation - road transportation wage expense. The costs in each operating district were finally apportioned between manifest, drag, main and branch line way trains,

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* Using the conventional A.R.E.A. distribution of repairs between use (65 percent) and time (35 percent) and the ratios of carrier road(33 1/3 percent) and yard (66 2/3 percent), car days developed in the one day test on this basis would effect a reduction of only 2 1/2 percent in terminal expense computed on a strict per diem basis.

upon the following bases: Road and power maintenance - gross ton miles;* car maintenance - loaded car days; road and station transportation and station maintenance - road transportation wage expenses.

Yard expenses of the accounting division were distributed among terminal districts embraced within the division upon the following bases: Road maintenance - yard track miles; power maintenance and yard transportation - locomotive hours; car maintenance - loaded car days; station service - consignments (equated by multiplying the l.c.l. consignments by one plus the ratio of platform labor expense to the remaining expense of station employees); water transfer and dock maintenance, directly, wherever possible, otherwise on vessel hours.

The yard expenses of each terminal district were then distributed among ten classes of yard track service: Cars originated or terminated in single carrier terminal service on (1) house, (2) team, (3) industry tracks; cars originated or terminated in multiple carrier service in (4) connecting switch service, (5) house track; (6) team track, (7) industry track service: (8) cars intermediately switched, (9) cars interchanged in road-haul service, or (10) intermediately yarded (single carrier) in road-haul service. Yard expenses were apportioned between these services upon the following bases: Station maintenance and operation - equated consignments; car maintenance - loaded car days; water transfer, wharves and docks - vessel hours; road and power maintenance and yard transportation - engine hours employed in each service.

The latter apportionment required that the hours of yard locomotives respectively employed in four assemblage functions - classification, transfer, interchange and terminal receipt or delivery - be first ascertained and reduced to a unit basis of cars handled in each service. In the interests of time and economy, a nationwide study to develop this information for individual terminal districts was not possible. In lieu thereof, the carriers made some three hundred such studies under a uniform method, including practically all metropolitan districts and a large number of major terminals in all parts of the country. Similar studies were made of local freight train switching in minor terminals in practically every State.

From these studies average engine minutes per car in each of the ten classes of service were developed. These averages were applied to the actual cars handled to obtain synthetic engine hours employed in each of the ten classes of service in each terminal district.* The actual yard expenses of each district were apportioned upon the basis of the percentage distribution of the synthetic engine hours so developed.

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* A refinement was later made by substituting a locomotive ton mile basis - see section 80 infra.

At large "gateway" cities in each territory where complete switching tests had been conducted, the results of such local tests were applied individually to those cities.# The tests at the remaining metropolitan areas in each of the nine rate territories were then aggregated and the results applied to each of the other metropolitan cities within that territory. Similarly the averages of the tests at major and minor terminals in each rate territory were applied to the other major and minor terminal districts in that territory.

Waterway

The average cost per ton for the period January 1, 1933 to June 30, 1933 was reported by ports for stevedoring, checking and clerking, watching, wharfage and dockage, insurance of men and gear, overhead and supervision, and other miscellaneous terminal expense, all separated as between loading and discharging.

The average monthly cost for the period January 1 to June 30, 1933 was obtained for executive and management expense; traffic department and solicitation expense, billing, cashier, and other clerical expense; the cost of shore staff for ship operation; main office, outport and interior office expense; lighterage cost, aggregate and per ton; and allowances in lieu of lighterage, aggregate and per ton.

The average monthly cost of operating each self-propelled unit, based on the period January 1 to June 30, 1933, or on the average of May, June and July, 1933, where seasonal services were resumed after January 1, 1933, were reported for each ship, broken down as to wages of crew, fuel, deck and

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* In all tests in all metropolitan districts and in all except a limited number of major terminal districts, these synthetic hours did not vary from the actual engine hours for the year by as much as 10 percent.

# Cities at which the individual tests were applied are as follows: Boston, New York, Philadelphia, Washington, Buffalo, Cleveland, Detroit, Toledo, Chicago, St. Louis, Pittsburgh, Cincinnati, Minneapolis-St. Paul, New Orleans, Portland, Seattle, Denver, San Francisco, Los Angeles, Kansas City, Omaha, Atlanta, Birmingham, Louisville, Memphis, Houston, Dallas and Fort Worth.

engine supplies, steward's supplies and food for crew, marine insurance - hull and engine, P. & I. insurance,taxes,repairs, depreciation and all other transportation expenses.

The average voyage cost of operating non-propelled units, based on May, June and July 1933, was secured, showing the class of equipment, wages per unit, loading, discharging, towing and total transportation costs, separated as to upstream and downstream.

General taxes for the calendar year 1932, such as real property, personal property, floating equipment, franchise or privilege, income, gross revenue, capital stock or other, were also reported.

Highway

Highway freight operations in the large sense can be analyzed either from a function or service viewpoint. The first involves a segregation between "transportation" elements and "maintenance" or "overhead" elements. Due to the nature of highway transportation these elements may easily be grouped into "variable" and "fixed" costs for convenience in accounting and use. From the service viewpoint, highway operations are separated into terminal and line-haul movements with the cost accounting system set up to reflect the cost of each type of service. Both function and service costs are necessary to properly evaluate any transportation operation and both have been used in the study of motor truck costs.

The number of items and amount of detail used by truckmen in expressing function costs were found to vary considerably. To reconcile the hundreds of voluntary reports, "variable" costs were grouped into a limited number of accounts, comprising: Gasoline, oil, tires, maintenance, garage miscellaneous, vehicle depreciation, drivers' and helpers' wages, variable license fees, gasoline and oil taxes. Likewise, "fixed" costs were grouped as follows: Garage rent; vehicle insurance; interest on investment in vehicles; general overhead, salaries and wages; general overhead, other; licenses and taxes, not variable.

From the aggregate expense and performance data, unit costs were developed as follows: Cost per vehicle day, per vehicle hour, per vehicle mile and cost per net ton, as well as the cost per loaded container for varying lengths of haul.

69. Statistical Procedure

Waterway

The returns received indicated that much time and expense had undoubtedly been involved in their preparation, but the accounting and statistical records of the various companies were not such as to enable all carriers to return comparable replies as to all the details requested. With limited exceptions, however, sufficient data were obtained to be representative of the industry as a whole and for each class of service and the several territorial districts.

The statistics pertaining to equipment and physical property of water carriers were compiled for common, contract, private and total carriers for the industry as a whole and for the six territorial districts.*

Routes and services of water carriers were analyzed for common, contract and private carriers in each of the six territorial districts and summarized for each district and for each of the classes of carriers. They were grouped according to ports of origin showing ports of destination and ports of call en route; the number of companies operating from each port; the number of routes served; the total round trip mileage of all routes; the average round trip mileage per route; the average time required for round trip in 24-hour days per route; and the number of round trips made annually.#

The tonnage handled by each class of carrier in each of the six territorial districts was analyzed and summarized by district and by class of carrier. Tonnage figures were compiled by each of 23 principal commodity groups, miscellaneous and l.c.l. for all routes from ports of origin showing ports of destination and number of companies reporting.ø

Since many respondents did not keep records of their tonnage in port-to-port order, certain estimates were necessary to obtain ton mile figures. Such estimates took into consideration the length of haul and the known tonnage attributable to particular ports. The balance of the total reported tonnage was attributed to other ports upon estimates. These estimates were based upon the size of the other ports, the type of commodity involved and the number of calls en route. The proportions of the total reported tonnage that was overhead and the proportions received or discharged at intermediate ports, the overhead mileage distance and the location of the intermediate ports were used as factors to estimate ton miles.

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* Exhibit 801, Appendix.
# Exhibit 802, Appendix.
ø Exhibit 803 .

The weighting of the tonnage and the location of the intermediate ports against the overhead ports made possible the calculation of an average tonnage for the entire route. For example, if the data reported or estimates made revealed that intermediate stops for unloading were of such importance that a vessel carried only 50 percent of its original 1,000 ton cargo over the entire route of 100 miles, and the other 50 percent traveled over only one half of the route, the ton miles would equal 100 x 500 plus 50 x 500 or 75,000 ton miles.

The reports covering by far the greater part of the tonnage, however, were in such shape that such estimates were not necessary.

Estimated ton miles which would have resulted had the water-borne tonnage been handled by railroads were also computed. For all overhead tonnage this was a simple matter. The tons moved multiplied by the route miles of the most direct practical rail route produced the desired figures. Where estimated ton miles by water routes had to be obtained, because of insufficient data in the reports as to tonnage handled intermediately, these estimated water ton miles were used to compute the average mileage of all the tonnage handled on a route. In the case of the example, in a preceding paragraph, where one half the tonnage traveled 100 miles and one half the tonnage traveled 50 miles, the average distance that all the tonnage traveled was 75 miles. By determining the total overhead rail distance through the intermediate ports of call, and the percentage that all the water tonnage traveled on a given route of the overhead water route distance, workable estimates of rail ton miles were made.*

Operating expenses were divided as to maintenance, traffic, transportation and administration. Maintenance expenses were separated as between vessels and terminals,and traffic expenses as between sales, clerical and supervision. Transportation expenses were divided between vessel operating and terminal expenses, each of which was further subdivided into the various types of expenses which were reported as requested in the questionnaires. Administrative expenses were divided between executive and management, insurance, taxes and other. Grand total of all operating expenses was compiled, and total cost of freight operations was obtained on a revenue prorate basis. These operating expense figures were determined for each class of carrier in each of the six districts and totaled for each class of carrier and for each district. Freight revenues and the ratio of freight costs to freight revenues were also ascertained by classes of carriers, by districts and for class and district totals.#

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* Exhibit 803. # Exhibit 804.

The average cost and average revenue per ton, the ratio of cost to revenue per ton, the average cost per ton mile by water, the average revenue per ton mile using actual water routes and also using estimated rail distances, the ratio of water cost to revenue per ton mile, the average cost per ton and per ton mile at capacity, and the percentage that the 1932 tonnage was of total freight tonnage vessel capacity for each class of carrier in each of the six districts and for totals by classes of carriers and by districts were computed.*

Highway

In the terminal trucking field study the object was to discover differences in trucking costs arising from variations in the type of terminal work done, the kind of equipment used, operating methods employed, and the size, location, geography and relative congestion of the terminal. As this report deals solely with the quantity movements of freight, excluding merchandise traffic, only movements of full truck loads in terminal areas were studied, pick-up and delivery service of odd lot merchandise being excluded.

Studies were made at New York, Chicago, Milwaukee, St. Louis, Cincinnati, Philadelphia, Little Rock, Arkansas, and Texarkana, Texas. Detailed cost information was developed for eighteen distinct operations involving medium and heavy-duty trucks, tractors and semitrailers, some vehicles being equipped with fixed and some with demountable bodies. Operations in other cities could have been studied profitably, but the ones which were covered include the largest terminal trucking operations in the United States as well as all of the special types of terminal truck equipment to be found. Studies at other cities would have developed no other unique or distinctive types of operation, and so were omitted.

In the New York metropolitan area six operations were studied and in addition the results of a 1934 survey by the New York State Motor Truck Association were made available. The Port of New York Authority likewise cooperated splendidly by supplying pertinent information which it has collected for more than a decade. Four distinct types of operations were studied in Chicago, three in St. Louis, two in Milwaukee, and one each in the other cities. Several of the operations are performed directly by railroad companies, two by private concerns performing warehouse distribution, and all others by terminal trucking companies.

With respect to the Coordinator's motor truck study, analysis 75.5 summarizes the information received from the truck operators, the vehicles being divided into six gross weight groups: Less than 5,000 pounds, increasing by 5,000 pound increments to 25,000 pounds, and those over 25,000 pounds. From these data the variable and fixed costs of private and for-hire operations of various capacity truck units shown in analysis 75.6 were developed, together with the miscellaneous averages shown on the same analysis. The basic data for each of the important elements affecting highway operating costs were plotted for the six vehicle gross weight groups, formulae were developed by inspection and from weighted averages, and the resulting equations shown graphically on page 127 et seq.

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* Exhibit 805.

The operating cost data which were developed allow for but one variable - that of vehicle size in terms of gross weight, and of course represent average trucking costs, primarily for highway movements as distinguished from purely terminal service. Many other factors in addition to vehicle size influence specific operations to such an extent that total operating costs of individual vehicles may vary as much as 50 or 60 percent from the average values here developed. The existence of such influences rendered the presentation of actual instances of truck costs so subject to interpretation that generalized conclusions from them would be unreliable except through the establishment of trends of averages. The conclusions that may be drawn will represent the truth, insofar as broad, nationwide conditions are exemplified in the data on which the study is based.

Truck costs are influenced by many variables, and in different ways. Hardly the experience of any two trucks involves the same influences, much less to the same degree. They may be of the same age, make and model, carry the same load, operate over the same highway, and yet their costs may be quite different. The drivers will be different, though both may be valuable employees; the tax may be different, if one is a private carrier and the other a common or contract carrier; the fuel cost may vary, if purchased in different States; and a host of other minor factors may enter into the costs of the particular trip. But if their annual mileages, or their average load factors, or their idle hours vary greatly, their costs for the operating year will scarcely be comparable. Nevertheless, similarity of manufacturing technique, automotive maintenance technique and a general standardization of vehicle types for average use, are responsible for certain underlying regularities which show up as the more superficial causes of variety are lost in the averaging processes.

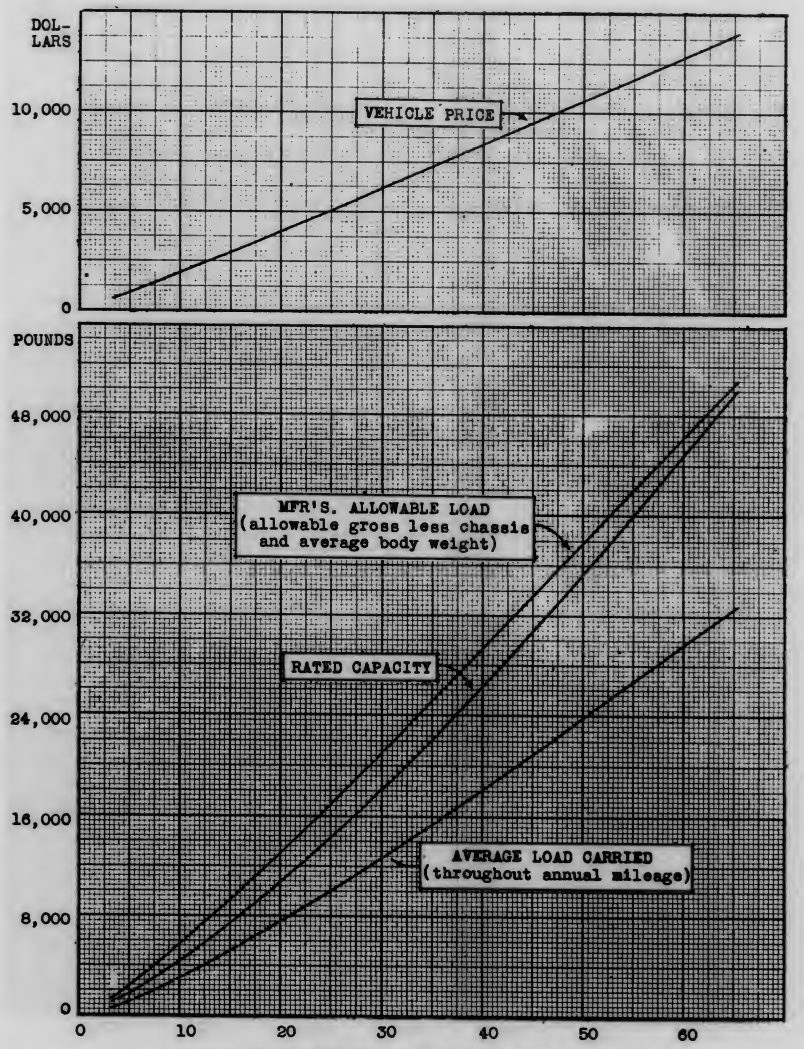
Dominant among the causes of variation throughout the entire truck range is the element of gross weight. Vehicle price, and actual capacity, and annual mileage, are related to it. Price and capacity are so related because gross weight represents the quantity of metal or machinery put together in a certain way for a definite load-bearing purpose, plus that load; and annual mileage is related to it because annual mileage determines the spread of the overhead, and the larger the investment, the greater will be the pressure toward spreading that overhead, or conversely, if the traffic and mileage requirements are not present the investment is less likely to be made. And since all items of cost are in some way related to investment or to mileage, it is only natural that they will also relate to weight. The analysis, therefore, resolved itself into a comparison between the gross weight of the vehicle and each item of cost separately, and a summation of the item averages thus derived in the determination of normal totals.

A logarithmic relation was found to exist very definitely in all principal items, i.e., for each percentage increase in gross weight there was a constant percentage increase in the item. In all operating costs except one there was a smaller relative increase in the cost item than in gross weight, and that single item was license fees and taxes. In other words, taxes increased at an increasing rate, while other cost items increased at a decreasing rate as the gross weight increased.

It may be observed that the curves are not always curves of best fit for the group averages (page 127 et seq.). But it will also be observed that certain groups, quite out of line, contain far more trucks than those seemingly in order, and methods of best fit would give weight to the number, or again, if based on the average would be misleading.

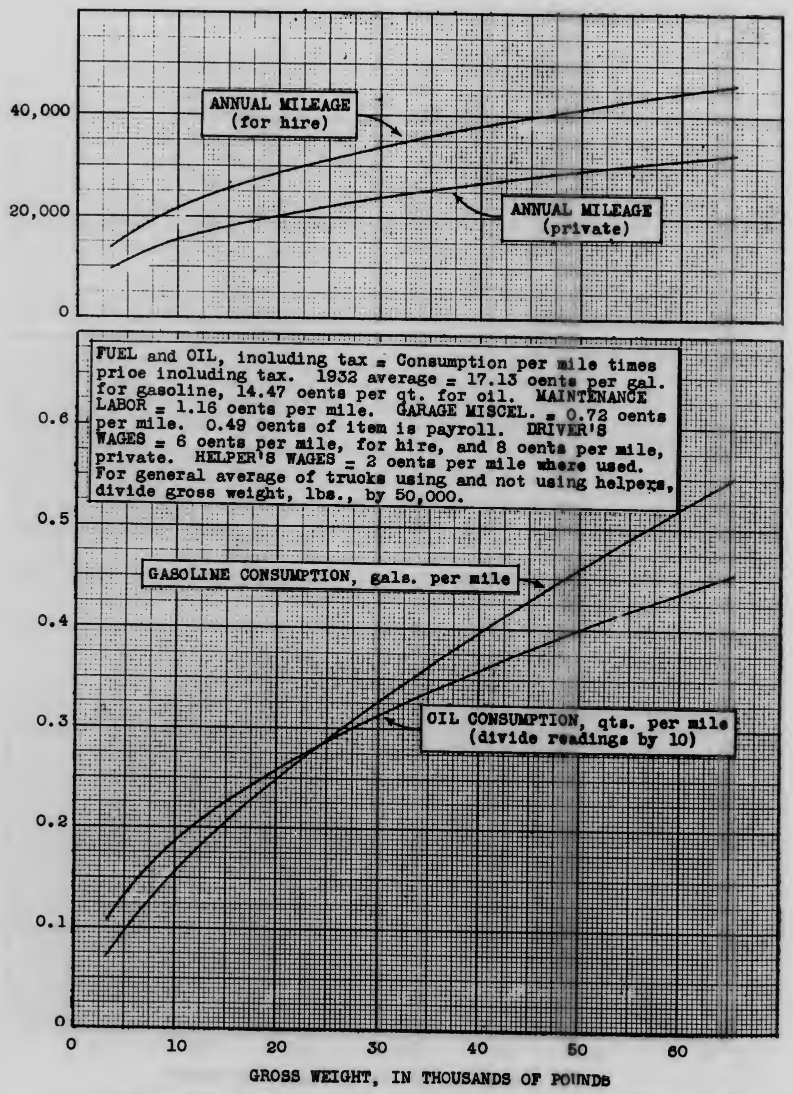
The particular procedure followed in fitting each curve is discussed along with each item in the following pages. In general, however, the slope of the logarithmic straight line, representing the exponent was first determined by inspection, and by careful comparison with the experience of fleets whose records were especially complete or especially trustworthy. The coefficient was then determined as the weighted average coefficient for the trucks involved in all six group averages, or as the simple mean of the six averages, depending on the particular circumstances. The equations thus developed were applied to gross weight values for the rated capacities provided in analysis 75.6, and the results are presented therein.

CHART FOR DETERMINATION OF MOTOR TRUCK OPERATING COSTS - SECTION ONE



(Compute Average Gross Weight throughout annual mileage, or determine 1932 average by reading down from Rated Capacity Curve.)

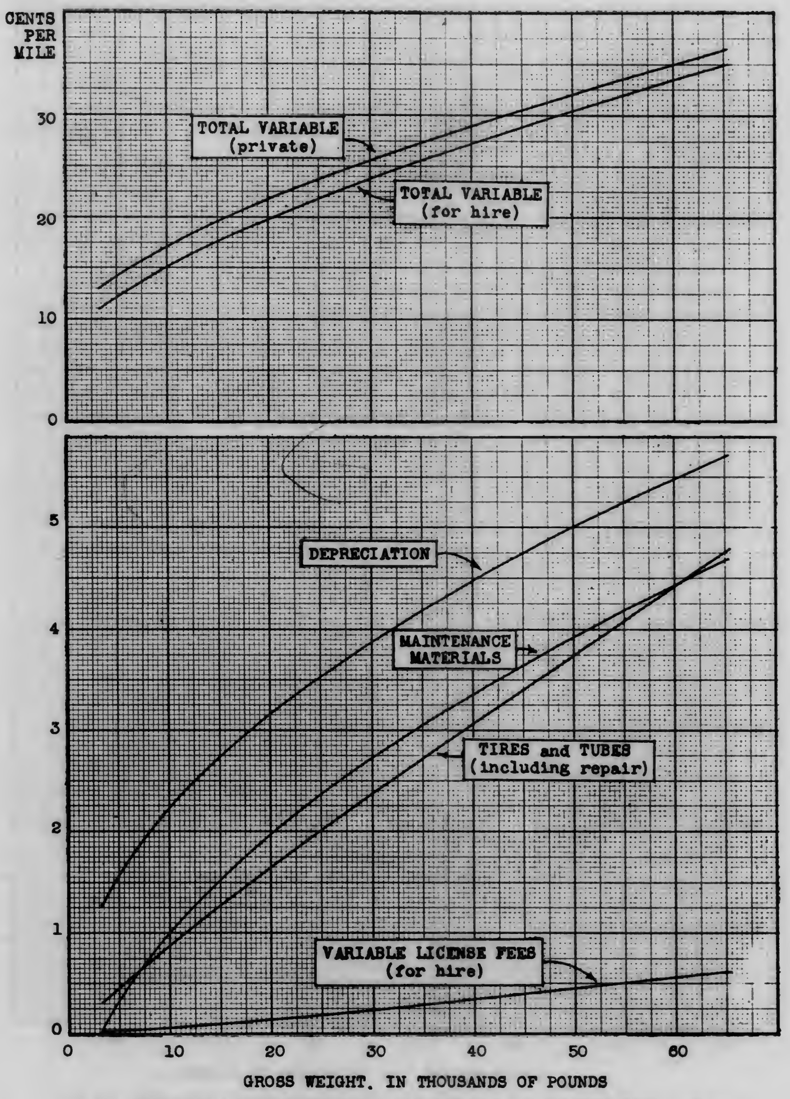
CHART FOR DETERMINATION OF MOTOR TRUCK OPERATING COSTS - SECTION TWO



FUEL and OIL, including tax = Consumption per mile times price including tax. 1932 average = 17.13 cents per gal. for gasoline, 14.47 cents per qt. for oil. MAINTENANCE LABOR = 1.16 cents per mile. GARAGE MISCEL. = 0.72 cents per mile. 0.49 cents of item is payroll. DRIVER'S WAGES = 6 cents per mile, for hire, and 8 cents per mile, private. HELPER'S WAGES = 2 cents per mile where used. For general average of trucks using and not using helpers, divide gross weight, lbs., by 50,000.

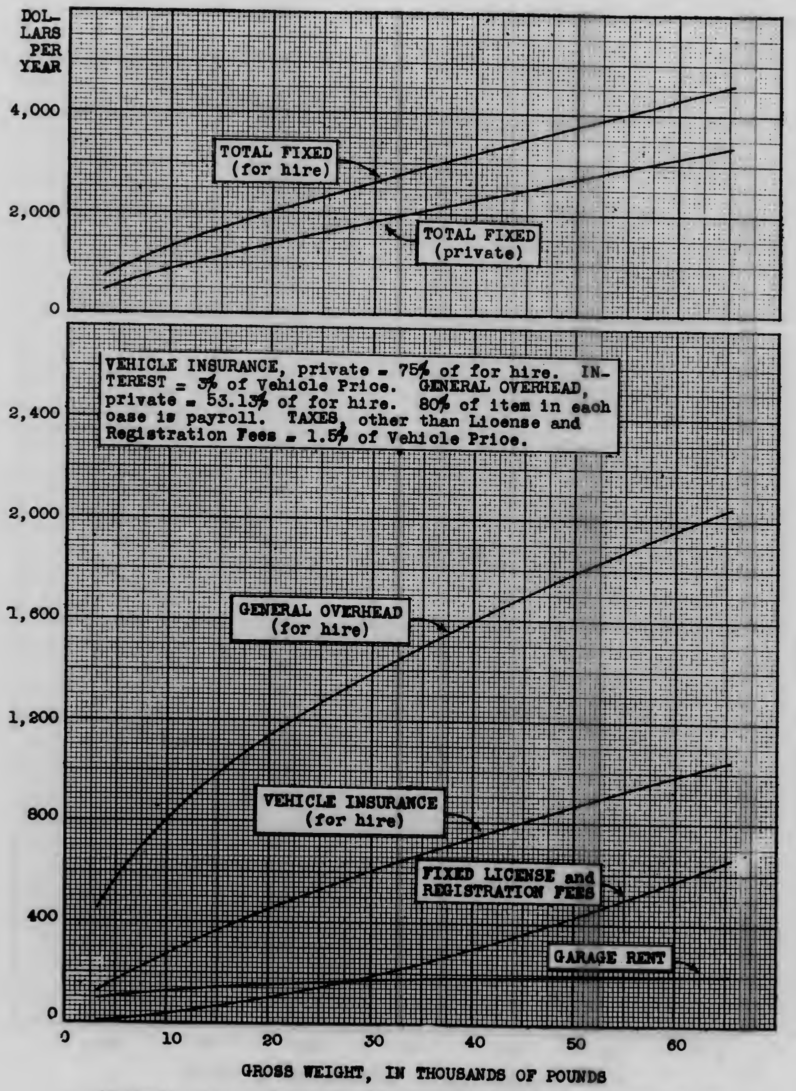
(Compute Average Gross Weight throughout annual mileage, or determine 1932 average by reading down from Rated Capacity Curve.)

CHART FOR DETERMINATION OF MOTOR TRUCK OPERATING COSTS - SECTION THREE



(Compute Average Gross Weight throughout annual mileage, or determine 1932 average by reading down from Rated Capacity Curve.)

CHART FOR DETERMINATION OF MOTOR TRUCK OPERATING COSTS - SECTION FOUR



VEHICLE INSURANCE, private = 75% of for hire. INTEREST = 3% of Vehicle Price. GENERAL OVERHEAD, private = 53.13% of for hire. 80% of item in each case is payroll. TAXES, other than License and Registration Fees = 1.5% of Vehicle Price.

(Compute Average Gross Weight throughout annual mileage, or determine 1932 average by reading down from Rated Capacity Curve.)

XIX NATURE OF OPERATIONS

70. Extent of Carrier Operations

Railway In the United States there are 167 thousand road miles of main line* and 76 thousand road miles of branch line, the main lines constituting about 69 percent of the total mileage. Of this main line mileage about 31 percent is in the Eastern District; about 19 percent in the Southern District; and 50 percent in the Western District.

In 1932 approximately 5 million freight trains were operated (not quite 15 thousand per day) for an average distance of 73 miles each and for an average time of 4 1/2 hours each. About half the trains were operated in the Eastern Classification Territory; a little less than 20 percent in the Southern Classification Territory; and the remainder in the Western Classification Territory.#

The average train density per mile of road was 1,611 trains per year, a daily average of slightly more than 2 trains each way. The train hour density was 100 hours per mile per year, which means that the road at any given point on the average was in use 16 minutes out of every day of 24 hours.

The car density per mile of road in car miles was 43 thousand car miles per year, which means the passage over each mile of track of about 117 cars per day. The density in net ton miles per mile of road was 970 thousand, or 2,650 tons per day.

The maximum utilization in train miles per mile of road was in Trunk Line Territory - about 3 3/4 trains each way per day. The minimum utilization was in the Pacific Northwest where it was a little less than 1 1/2 trains each way per day. The greatest net ton mile density was in Pocahontas Territory where it was 2,750 thousand net ton miles per mile of road; the lightest density in the Southwestern Territory where it was just under 500 thousand net ton miles per mile of road. The average gross ton miles per loaded car mile was 72 ton miles,ø of which 23 tons were net and 49 tons tare weight. These figures did not vary greatly between territories. The highest density per loaded car mile was in

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* A line over which one through freight or passenger train is operated per day.

# These and the following statistics from analysis 70.4 and 70.5.

ø Analysis 70.3.

Pocahontas Territory, where the gross ton density was 90 tons and the net 38 tons. The lowest density was in the Pacific Southwest where the gross tons per loaded car mile were 65 and the net 17.

The average train in the United States handled 26 loaded cars. The maximum handled in any district was in the Pocahontas Territory where 33 cars were handled; the minimum in the Southeastern Territory where 21 cars were handled.

The average gross tons per train for the United States as a whole were 1,900. The highest were in Pocahontas Territory with 2,900 and the lowest in the Southeastern Territory with 1,500. The average number of net tons per train for the United States as a whole was 600. The highest was Pocahontas Territory with 1,250 and the lowest Southwestern Territory with 450.

The average number of train miles per train hour was 16.* This average speed was exceeded in Central, Southeastern and Southwestern Territories by 1 mile. It was equaled in the Pacific Northwest and Pacific Southwest Territories. The lowest speed was in Pocahontas Territory - 13 miles per hour.

Waterway

In the Atlantic Coastwise and Inland service, detailed reports were received from 46 companies, 32 common carriers, 5 contract carriers and 9 private carriers. Common carriers operated over 65 routes and made 14,262 round trips, the average mileage of which was 399 miles.# The average time required for a round trip was just over two days. The principal ports of origin were New York, Baltimore, Philadelphia, Norfolk and Savannah. Other ports of origin ranged from Maine to Florida. Ports of destination and intermediate ports of call included all principal cities on the Atlantic Coast and navigable rivers flowing into the Atlantic Ocean. The total mileage of the common carrier routes in this district amounted to 22,387 miles.# Contract carriers reported seven routes on which 250 round trips were made, averaging 954 miles in an average time of a little less than 5 days. Three of the seven routes were operated between Hampton Roads ports and the Carolina Coast, New York, Boston and other New England ports. The total mileage of all routes was 4,833 miles. Private carriers reported 17 routes on which 268 round trips were made, averaging 1,154 miles in 9 1/2 days per round trip. Eleven of these routes were from Hampton Roads ports both north and south along the Atlantic Coast and the total mileage of all routes operated by these private carriers was 13,680 miles.#

In the Atlantic Gulf service, detailed reports were received from 11 companies, 9 common carriers, 1 contract carrier and 1 private carrier. The common carriers operated 21 routes and made 1,142 round trips of an average of 2,482 miles in an average of 10 days per round trip. The principal services were between Boston, New York, Philadelphia, Baltimore and Florida ports and Mobile, New Orleans, Galveston and Houston. The total mileage of these common carrier routes was 26,139. Two contract and private carrier routes were reported. On these routes 38 round trips of an average 4,242 miles were made in an average of 35 days.*

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* Analysis 109.1. # Analyses 70.2 and 70.3.

In the Intercoastal service, 13 companies reported in detail. Eleven were common carriers, 1 a contract carrier and 1 a private carrier. The common carriers operated 13 routes, made 434 round trips of an average of 13,623 miles in an average of 77 days. The services were between Atlantic ports ranging from Portland, Maine, to Charleston, South Carolina; Gulf of Mexico ports and Pacific ports from San Diego, California, to Vancouver, British Columbia. The total mileage of the routes amounted to 88,127 miles. Contract and private carriers reported 2 routes. They made 16 round trips of an average of 12,050 miles in an average of 90 days.*

On the Inland Waterways-Mississippi System, 13 companies returned detailed reports, 8 common carriers, 4 contract carriers and 1 private carrier. The common carriers made 676 round trips of an average of 1,252 miles in an average of 14 days. The services reported covered principally the Mississippi River from Minneapolis to New Orleans, the Illinois River and canal system from Chicago to the Mississippi River, the Ohio River from Pittsburgh to Cairo, and the Warrior River system from Birmingport to New Orleans. The total mileage of common carrier routes in this district amounted to 9,489 miles. The contract and private carriers operated 9 routes principally over the Mississippi River from Cairo south, the Ohio River from Pittsburgh to Cairo and the Alabama-Warrior River system from Birmingport to New Orleans, made 230 round trips of an average of 1,069 miles in an average of 12 days. The total mileage reported was 4,110 miles.*

On the Great Lakes system, detailed reports were received from 53 companies, 17 common carriers, 23 contract carriers and 13 private carriers. The common carriers operated over 29 routes, made 12,623 round trips of an average of 148 miles in an average time of 19 hours. The principal services reported were on Lake Erie between Buffalo, Cleveland, Toledo and Detroit; between Lake Erie ports and Lake Superior Ports; and between Lake Erie ports and Lake Michigan ports. The total mileage of the routes operated by common carriers was 10,951 miles. Contract carriers operated over 45 routes of an average of 1,454 miles, round trip, and a total one way mileage of 36,004 miles. Their average time for a round trip was about 8 days and 1,250 round trips were made. The private carriers operated over 23 routes of an average round trip length of

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* Analyses of 70.2 and 70.3.

1,139 miles and a total mileage of 13,422 miles in an average of about 6 days per round trip. Nine hundred and thirty round trips were made. The territory served by contract and private carriers was generally the same as that served by common carriers, except that some operations between the Great Lakes and the Atlantic Seaboard were maintained through the New York State Barge Canal.*

On the Pacific Coastwise and Inland service, detailed reports were received from 33 companies, 26 common carriers, 3 contract carriers and 4 private carriers. The common carriers operated over 63 routes and made 79,714 round trips of an average of 44 miles and a total of 14,099 route miles in an average of about 7 hours per round trip. Their major operations were coastwise between the Puget Sound and Columbia River districts, the San Francisco Bay district and the Los Angeles Harbor district; on the Puget Sound; on San Francisco Bay and tributary rivers; and from Puget Sound to Alaska. Contract carriers operated 4 routes of an average round trip mileage of 1,072 miles and a total route mileage of 3,686 miles. Their average time for a round trip was about 6 days. Their service was principally coastwise between Puget Sound and Los Angeles Harbor districts and 112 round trips were made. Private carriers operated 4 routes. Their average round trip was 376 miles, the total route mileage was 1,900 miles and the average time per round trip was about 6 days. Eight hundred and fifty-eight round trips were made.*

Petroleum The data pertaining to the operation of pipe lines are obtained from the reports filed by the pipe line carriers reporting to the Interstate Commerce Commission. In 1932, the 46 principal pipe line companies reporting to the Interstate Commerce Commission operated a total route mileage of 92,783 miles of which 51,405 miles were main or trunk lines and 41,378 miles were branch or gathering lines.# The total ton miles of service performed by these companies aggregated 32 billion net ton miles, an average of 345 thousand ton miles per route mile of pipe line for the year.ø

The total revenues of the 46 reporting pipe line companies amounted in 1932 to approximately 212 million dollars of which 200 million dollars were earned for the transportation of raw materials; that is, crude oil and about 12 million dollars were earned in connection with the transportation of material classified as "Auxiliaries"; that is, refined petroleum.⌿

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* Analyses 70.2 and 70.3.
ø Analysis 70.1.
# Analysis 1.8.
⌿ Analysis 4.1.

XX CIRCUITY OF MOVEMENT

71. Directness of Movement

Railway The analysis of movements of all cars which terminated on December 13, 1933 made possible the determination of the average deflection from the direct route of rail shipments.* The direct route used in each case was not necessarily the shortest possible distance by rail, but was the shortest of the routes normally or customarily used.

In the United States as a whole the average car terminated on that day moved about 11 percent further than would have been necessary had it moved via the direct route. The same ratio of circuity (11 percent) also obtained in the three Districts - Eastern, Southern and Western. The greatest degree of circuity appeared in movements originating in the Pacific Northwest and moving to New England, 27 percent; in the Southwestern moving to Pocahontas Territory, 23 percent; from Pocahontas to Southwestern Territory, 18 percent; and from the Southwest to Western Trunk Line Territory, 18 percent.

The average circuity of cars of the several commodity groups is as follows: Live animals, 7 percent; grain, perishables, coal and coke, ores, 9 percent; edible animal products, 10 percent; stone and gravel, textiles, sulphur and sulphuric acid, forest products, manufactured food, 11 percent; miscellaneous farm products, non-ferrous metals, chemicals, appliances, 12 percent; paper and products, cereals, 13 percent; miscellaneous manufacturers, cotton, hay and tobacco, 14 percent; petroleum and its products, iron and steel articles, building materials, 15 percent; oils, vegetable and animal, 16 percent; and glass, 17 percent.

Waterway Of the 320 routes analyzed, less than 20 could not be served by land transportation. These were principally routes between main land and islands off shore on the Atlantic Coast, the Great Lakes, Puget Sound and the Pacific Coast. The total reported freight tonnage carried over all of these routes served only by water carriers was about 150 thousand tons in 1932, or only about .3 percent of the total waterline freight tonnage.

In the Atlantic Coastwise district, the estimated number of ton miles incurred over the water routes was 4,168 million ton miles. Using railroad distances in this district, the ton miles which would have resulted had the traffic been moved by rail would have been 3,907 million ton miles. In this district the water routes were about 7 percent longer than rail routes. On the Atlantic Gulf service, the water ton miles were 4,376 million while rail ton miles would have been 3,573 million, indicating an advantage of about 22 percent in distance by rail as compared to water routes. Intercoastal services required 23,169 million ton miles, whereas the use of rail distances would have resulted in only 10,137 million, or a saving of 56 percent. On Inland Waterways-Mississippi system, the ton miles by water routes were 3,010 million. The same tonnage could have moved by rail between the same points using 1,830 million ton miles only, or 39 percent less. On the Great Lakes system, the water ton miles incurred were 17,172 million. Rail ton miles necessary to have moved the traffic were 16,535 million, or 4 percent less. On the Pacific Coastwise district, however, the water ton miles used were 1,028 million, whereas rail ton miles of 1,094 million would have been created had the traffic moved by rail lines. In this district, shorter water distances resulted in a saving of 6 percent in ton miles.*

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* Analyses 71.1 to 71.6, inclusive.

XXI OVERALL COSTS

72. Carrier Investment in Freight Facilities

Railway

The amount or value of the investment upon which carriers will be permitted to earn a return - a highly controversial issue of the past two decades - has lost much of its former importance. The return which the railway can earn under existing conditions is much more to the point. The aggregate "book cost" of the railways now approximates the "value" for ratemaking purposes tentatively fixed. The eventual coincidence of the two was inevitable once a cut-off date was fixed, after which replacements were accounted for upon a uniform and consistent basis, since the great bulk of rail property is consumed in use and the plant practically renewed over the composite service life cycle of its units.

The capital invested in freight facilities of rail carriers is shown in analysis 1.1.

Waterway

The reported original cost of self-propelled vessels owned by respondents was $448,000,000, and of non-propelled vessels $30,000,000, making a total of $478,000,000. These vessels had been depreciated on the books of the reporting companies down to $271,000,000 for the self-propelled vessels and $23,000,000 for the non-propelled vessels, leaving a total book value as of June 30, 1933 of $294,000,000. The book value of all other property and equipment owned or leased by the reporting companies as of the same date was $39,000,000.# The balance sheets and other financial records of the reporting companies were of various forms. In some instances detailed figures were not furnished. Neither the total sums originally invested, nor the amount of available or needed working capital, could be determined for all carriers. Comparable figures were obtained from companies who carried on their books as of June 30, 1933, $274,000,000, or 82 percent of the vessels and property owned. These companies reported as assets: Investment in property, fleet and equipment, less depreciation $274,000,000; investments, trust funds, and other cash working assets, $117,000,000; total $391,000,000. Their liabilities were: Capital stock $183,000,000; long term debt $99,000,000; current liabilities $45,000,000; surplus $64,000,000.*

It is extremely doubtful that the financial situation of the companies who owned the other 18 percent (in value) of the equipment is at all comparable with that of those companies who reported in detail, as most of the old established concerns were in the latter class.

72. Carrier Investment

Petroleum

All pipe line companies reporting to the Commission, for the year 1932, operated nearly 93,000 miles of trunk and gathering pipe lines representing a total investment of $764,000,000. The 12 companies comprising the North Atlantic Coast group had $55,000,000 invested in 14,700 miles of pipe lines; the 16 Great Lakes-Southwest carriers had $319,000,000 invested in 44,800 miles of line; and the 18 companies in the Southwest Gulf group operated 33,300 miles of trunk and gathering line, in which $390,000,000 was invested.#

Highway

The aggregate investment in highway vehicles used to transport freight is not known. This is not necessary, however, inasmuch as truck costs are computed on a vehicle unit basis, and the price of any highway freight vehicle is easily obtained. Manufacturers' published specification tables for 1926, 1928, 1930 and 1932 were used for price data.

The price of the vehicle will depend on whether it is a single unit or a tractor combination, the latter representing a saving in investment of approximately one third for similar capacity or gross weight. The cost data supplied by highway operators offered no evidence of an average saving in any item save interest on vehicle investment. Since the tractor-trailer combination rarely appears below the 3-ton capacity group and wholly makes up the groups above 10-ton capacity,

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* Analyses 70.2 and 70.3. # Exhibit 801.

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* Report of Federal Coordinator of Transportation, 73rd Congress, 2nd Session, Senate Document 152, Appendix A.
# Analysis 1.8.

a diagonal was drawn between the two price parallels from the 1-ton truck to the 20-ton combination. This in effect follows what actually takes place, by diminishing the importance of the truck in the composite and increasing the importance of the combination as the size increases. The resulting composite or average price may be stated thus:

$$\text{Price (less tires), dollars} = 0.137\,(\text{gross weight, lbs.})^{1.04}$$

73. Cost of Capital Servicing

Railway An annual capital service charge of 5 percent upon the book value of railways amounts to almost $3,800 per mile of road, a sum greater than any other group of expenses.* Six times within the past 12 years the net earnings have equaled this amount.# In 1932 the earnings failed to do so by $1,430 per mile of road; but for the entire period it was earned exactly. Applied to the traffic units of 1932, it amounted to $2.34 per train mile; 8.9 cents per loaded car mile; and 3.9 mills per net ton mile. Applied to the average traffic units of the 12-year period it amounted to $1.65 per train mile; 6 cents per car mile; and 2.4 mills per net ton mile.ø

Waterway Dealing only with the reporting companies, a 5 percent return on capital stock and long term debt, which amounted to $282,000,000, would have been $14,000,000. The interest on the debt structure alone would have been $5,000,000. The industry, as a whole, suffered an operating loss of $10,500,000. In other words, the operations in 1932 were on a basis which failed by $15,500,000 of earning operating expenses and interest on long term debt and failed by $24,500,000 of earning operating expenses and a 5 percent return on capital stock and debt./ The reports indicated that only $2,500,000 of interest was paid in 1932, just about one half of the amount that accrued on a 5 percent basis.** The reports also showed that some of the older and larger companies at one time operated with very satisfactory results and had accumulated sizable surpluses. Thirty-eight of the companies paid dividends on their capital stock in 1932, in most cases out of surplus./

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* Analysis 73.1.

# Analysis 3.2.

ø Analyses 3.1 and 3.2.

/ Report of Federal Coordinator of Transportation 73rd Congress, 2nd Session, Senate Document 152, Appendix A.

** Exhibit 804.

The freight proportion of investment of the companies who furnished detailed reports amounted to $357,000,000.* The freight operations of these companies in 1932 resulted in a deficit of $11,900,000.# A 5 percent return on the freight proportion of the investment of these companies would have amounted to $17,900,000. These companies in 1932 failed by almost $30,000,000 of earning operating expenses and a 5 percent return on their freight services.

Petroleum The net operating income of 46 pipe line companies operating in the United States aggregated in 1932 110 million dollars, 80 millions of which were earned in the operation of trunk lines, and about 30 millions were earned in gathering line operations. The return upon investment in 1932 was over 14 percent.

Highway Interest on investment in vehicles was computed at 3 percent. This represents the normal basis, it being a general rule for the operator to credit to this item income on the depreciation reserve.

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* Analysis 1.4. # Analysis 4.1.

74. Transportation Function Operations

75. Overall Cost of Transportation

Railway

Total rail freight operative costs (i.e., costs other than capital servicing) aggregated in 1932 not quite 2 billion dollars, which was equal to 8 thousand dollars per mile of road. Of this amount 40 percent was expended for maintenance of property, fixed and movable, a like amount for transportation and 20 percent for overhead.* Further breakdown of these amounts will be made in later sections.

This total freight cost was equal to $369 per train operated, $72.42 for each car originated and $3.04 for each ton of freight originated, $81 per train hour and $5 per train mile; 19 cents per loaded car mile; 8.3 mills per net ton mile; and 2.6 mills per gross ton mile.

Due to interterritorial movement of traffic, territorial costs are more indicative if confined to mileage comparisons. The total cost per train mile in New England was $6.42; in Trunk Line Territory $7.31; in Central Territory $5.40; in Pocahontas Territory $5.49; in Southeastern Territory $3.99; in Western Trunk Line Territory $4.31; in Southwestern Territory $3.72; in Pacific Northwest $4.30; and in Pacific Southwest $4.54. Costs per loaded car mile did not vary greatly from the general average of 19 cents. The highest cost was in New England and Trunk Line Territories, 23 cents; the lowest in Pacific Northwest Territory, 16 cents. The other territories closely approximated the average. The same is also true of the cost per net ton mile. The highest was New England Territory, 13.2 mills; the lowest Pocahontas Territory, 4.4 mills.

Waterway

The freight proportion of total operating expenses of the companies who reported in detail were segregated as between maintenance, transportation and overhead. The total freight expenses of these companies in 1932 were $131,500,000. For maintenance they expended $22,200,000 or 17 percent; for transportation $79,000,000 or 60 percent; and for overhead $30,300,000 or 23 percent.#

Common carrier total freight expenses were $109,500,000 of which $18,500,000 or 17 percent was maintenance, $63,900,000 or 58 percent for transportation; and $27,200,000 or 25 percent for overhead. Contract carriers expended a total $13,900,000 of which maintenance accounted for $2,100,000 or 15 percent, transportation $9,500,000 or 68 percent and overhead $2,300,000 or 17 percent. Private carriers spent for freight operations a total of $8,000,000. They incurred maintenance expenses of $1,500,000 or 19 percent; transportation costs of $5,700,000 or 71 percent; and spent for overhead $800,000 or 10 percent.*

In the Atlantic Coastwise and Inland District, common carriers spent a total of $23,400,000 of which $4,500,000 or 19 percent was for maintenance; $14,500,000 or 62 percent for transportation; and $4.400,000 or 19 percent for overhead. Contract and private carriers in this district spent a total of $4,300,000 of which maintenance was $900,000 or 21 percent; transportation $2,900,000 or 67 percent; and overhead $500,000 or 12 percent.#

In the Atlantic Gulf service, common carriers expended a total of $15,200,000. Of this $4,100,000 or 27 percent was for maintenance; $8,700,000 or 57 percent for transportation; and $2,300,000 or 15 percent for overhead. Contract and private carriers operating in this service spent a total of $994,000, made up of $224,000 or 23 percent for maintenance; $768,000 or 77 percent for transportation; and $3,000 or .3 percent for overhead.#

In the Intercoastal trade, total freight service expenditures of common carriers were $42,300,000, of which $5,000,000 or 12 percent was for maintenance; $24,900,000 or 59 percent for transportation; and $12,400,000 or 29 percent for overhead. Contract and private carriers in this trade spent a total of $318,000, of which $87,000 or 27 percent was for maintenance; $197,000 or 62 percent for transportation; and $33,000 or 10 percent for overhead.#

On the Inland Waterway-Mississippi System, common carriers spent a total of $8,100,000, of which $2,100,000 or 26 percent was for maintenance; $4,700,000 or 58 percent for transportation; and $1,400,000 or 17 percent for overhead. Contract and private carriers operating in this district reported expenditures of $472,000 made up of $70,000 or 15 percent for maintenance; $317,000 or 67 percent for transportation; and $86,000 or 18 percent for overhead.#

On the Great Lakes, common carriers spent a total of $8,300,000, of which $1,400,000 or 17 percent was for maintenance; $4,400,000 or 52 percent for transportation; and $2,600,000 or 31 percent for overhead. In this district, contract and private carriers spent a total of $15,100,000 made up of $2,300,000 or 15 percent for maintenance; $10,400,000 or 69 percent for transportation; and $2,400,000 or 16 percent for overhead.#

On the Pacific Coast, common carriers incurred total freight expenses of $12,300,000, of which $1,500,000 or 12 percent was for maintenance; $6,700,000 or 54 percent for transportation; and $4,000,000 or 33 percent for overhead;

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* Analyses 75.1 and 75.4.

# Analysis 75.1.

* Analysis 75.1.

# Analysis 75.2.

while contract and private carriers spent a total of $767,000 made up of $59,000 or 8 percent for maintenance; $612,000 or 80 percent for transportation; and $96,000 or 13 percent for overhead.*

In analysis 75.2 the function unit costs of common carriers and other carriers for each of the six regions are shown. These units are route mile, schedule, net ton, schedule hour, schedule mile, ton mile via rail distances and ton mile via water distances.

Petroleum

The maintenance expenses of operation of pipe line service in 1932 amounted to over 48 million dollars, of which roadway expenses aggregated nearly 29 million dollars. Power expenses absorbed nearly 15 million dollars and station expenses aggregated nearly 4 million dollars.# The transportation expenses of petroleum pipe lines in 1932 amounted to nearly 28 million dollars, of which over 17 million dollars were absorbed in movement costs, over 9 million dollars in assemblage costs and 1 1/2 million dollars in agency expense expenses.ø Overhead costs aggregated nearly 26 million dollars, of which nearly 10 million dollars were absorbed in administration costs and over 16 millions in taxes. ⌿ Total operating expenses aggregated nearly 102 million dollars against total revenues of 212 millions, producing a net profit of about 110 million dollars.**

The 12 petroleum pipe lines operating in the North Atlantic section of the United States operated nearly 15 thousand miles of line and represented an investment of almost 55 million dollars. These lines originated over 2 3/4 million tons of traffic. They earned 6 1/2 million dollars in the operation of trunk lines and over 2 3/4 millions in revenues from the operation of gathering lines. The net operating income of these companies amounted to 2 1/2 million dollars. The trunk lines earned 2 1/2 million dollars and the gathering lines lost a little over 1 thousand dollars. These carriers earned, as a group, a return of 4.65 percent upon the gross investment in the lines. Sixteen interstate pipe lines operating in the Great Lakes - Southwest District operated nearly 45 thousand miles of pipe line, and represented a gross investment of 319 million dollars. These companies originated over 25 million tons of petroleum traffic and earned,in trunk line operation,over 76 1/2 million dollars and, in gathering line operation, over 21 1/2 million dollars. The aggregate net operating income of these lines in 1932 was nearly 49 3/4 million dollars, of which about 40 1/2 million dollars were earned in trunk line operation and about 9 1/4 million dollars in gathering line operation, producing a gross return upon investment of 15.57 percent.##

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* Analysis 75.2

ø Analysis 93.1.

** Analysis 4.1.

# Analysis 77.1.

⌿ Analysis 100.1.

## Analysis 70.8.

Eighteen interstate pipe lines, operating in the Southwest-Gulf District, operated over 33 thousand miles of pipe line and represented a gross investment of nearly 390 million dollars. These companies originated almost 55 million tons of petroleum traffic and earned, in trunk line operation, over 71 million dollars and, in gathering line operation, over 33 million dollars. The aggregate net operating income of these lines was 57 1/2 million dollars, of which 37 1/2 million dollars were earned in trunk line operation, and about 20 million dollars in gathering line operation, producing a gross return upon the investment of 14.76 percent.*

The function costs, maintenance, transportation and overhead, of petroleum pipe line transportation in 1932 amounted to about 102 million dollars. This was equivalent to a ratio of about 48 percent of the revenue earned and about $1,100 per route mile of pipe line operated. This was equal to $1.23 per net ton of traffic originated and to 3.2 mills per net ton mile. Of these function costs, maintenance absorbed over 48 million dollars, a ratio 23 percent of the revenue earned, and $521 per route mile. This was equivalent to 58 cents per net ton originated and 1.5 mills per net ton mile.# Transportation expenses amounted to nearly 28 million dollars, or a ratio of 13 percent of the revenue earned. This was equivalent to $301 per route mile, 34 cents per net ton originated, and .9 mills per net ton mile. Overhead expenses aggregated nearly 25 3/4 million dollars, which was equivalent to 12 percent of the revenue earned. This amounted to $277 per route mile, 31 cents per net ton originated and .8 mills per net mile.#

Highway

Truck costs, as heretofore stated, were grouped into two categories - variable and fixed. These costs are shown in analysis 75.6, in detail. The method of determining fuel, lubrication and crew wages is shown in this section; interest in section 73; maintenance and depreciation in section 92; taxes in section 101; administration in section 102; and insurance in section 103.

Fuel cost data included gasoline taxes, and the interacting variations made the cost approach difficult. Gasoline price data applied to consumption seemed the more reliable method of determination. The Petroleum Institute maintains records of the average price of gasoline, excluding the tax, as of the first of each month in 50 representative cities throughout the country. The 12-month mean for 1932 for tank wagon price was 12.45 cents per gallon; 12.5 cents is employed in the calculations in analysis 75.6.

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* Analysis 70.8.

# Analysis 75.1.

Average gasoline consumption is closely approximated by the equation:

$$\text{Gasoline consumption, gallons per mile} = 0.000310\,(\text{gross weight, lbs.})^{0.675}$$

A very close concentration about the line of averages was observed for all weight groupings from motor cycles of 500 pounds to gross loads of over 45,000 pounds. It satisfied a particular gross load movement of 144,000 pounds. It was checked with earlier American experience, and with contemporary Italian experience and found to be below each. It was checked with the tables used by General Motors Corporation representatives in estimating costs on new operations and found to be somewhat above. This, too, seemed consistent. Vehicle design is improving. The average vehicle in actual operation is somewhat older than four years. Its gasoline consumption would be greater than that of vehicle of present design. Its age, too, in terms of deterioration, would contribute.

The questionnaire data (analysis 75.5) were supplemented by additional consumption data, made available by other cost studies and through correspondence with fleet and special equipment operators who did not reply to the costs questionnaire. A summary of all the gasoline consumption information follows:

Gasoline Consumption, All Data

Number and Type of Vehicles	Average Gross Weight, lbs.	Consumption in Gallons per Mile
45,181 Motorcycles	768	.0275
11,913 Passenger Cars	3,444	.0734
1,888 Trucks	3,829	.0820
13,680 Trucks	7,309	.1292
10,737 Trucks	12,731	.1723
7,329 Trucks	16,774	.2413
3,252 Trucks	23,563	.2826
1,122 Trucks	35,946	.2794

In these data the 6 truck groups correspond to the gross weight groupings of analysis 75.6. The drop below the trend for the last group may be attributed to (1) a relatively greater number of line-haul vehicles in the group; (2) the tendency of estimates to be in round numbers of 4, and particularly 5 miles per gallon, when actually the mileage per gallon was perhaps nearer 3 or 3 1/2; and (3) better than average road and grade conditions where the greater part of this small group of heavy vehicles operated. The weighted average coefficient resulting from this entire body of data is used.

Gasoline consumption is influenced widely by many factors other than gross weight. Road surface conditions may add 50 percent, grade conditions 50 percent, speed increases 50 percent, stops per mile for delivery or traffic 50 percent, under inflation of tires 10 percent, and the auxiliary use of engine power for hoisting, etc., 10 percent. These increases are based on the tests indicated, but the percentage of increase has in each instance been picked with practical conditions, which an operator may be compelled to face, in mind. It is not the theoretical extreme.

Added to these uncontrollable factors will be other factors more or less within control. Idling time may add 10 percent, improper carburetor adjustments 50 percent, improper maintenance or old age 25 percent, climatic conditions 10 percent, and acceleration, deceleration and driver carelessness 10 percent. There may be others.

These may be cumulative. Operator experience indicated a 50 percent deviation from average consumption to be quite usual. Appropriate analysis should examine these deviations for standard deviation values. For the time being it is only necessary to recognize that in all these averages wide deviations do exist in actual operator experience.

Oil Consumption. The consumption of lubricating oil in quarts per mile will vary, in the opinion of experts, according to the following factors: Improper viscosity at operating temperature, plus 25 percent; design of engine, plus 250 percent; exceeding critical speed - though it has not been ascertained whether this is a practical consideration in motor truck operation - plus 250 percent; improper maintenance or old age, which implies improper combustion of fuel and the dilution of the lubricant with gasoline, plus 100 percent. Lack of dust filters and other preventive measures to keep foreign substances out of the lubricants is also a factor. Average consumption, however, may be expressed as:

$$\text{Oil consumption, quarts per mile} = 0.000222\,(\text{gross weight, lbs.})^{0.480}$$

Oil costs were taken directly from operator experience. The average cost per quart indicated was 14.47 cents. One cent was subtracted from this as the Federal tax and the 13.47 cents remaining were applied to consumption.

Tire costs were developed directly from operator experience. Scatter of data in experimental plots formed parallel lines which upon inspection were found to represent figures based upon arbitrary mileage life selections of 10,000 to 40,000 miles. Such arbitrary charges on the part of operators, may or may not agree with their actual experience. There are too many variables in tire wear to justify such consistency in indicated mileage life. The tire, of course, supports the gross load and through it is transmitted all of the effort which moves the vehicle over the road. Consequently, tire wear is variable importantly with the ratio of the actual load being carried to the load for which it was designed, and it is variable with many other factors aside from gross load. The road surface, vehicle speed, slippage, impact and temperature conditions of the road surface, or the brake drums, are influences. Speed is important in that rolling resistance increases in a small way with it, and air resistance increases approximately according to its square. This piling up of resistance as the speed increases is reflected in tire wear, just as it is in gasoline consumption. As the engine must do the work that work must be done through the tire. Under or overinflation practically synonymous with loading, sudden temperature changes, improper adjustment or use of brakes, spring characteristics, wheel alignment, driver carelessness and improper maintenance are other factors. Round numbered mileage lives must, therefore, be estimates.

The slope of the logarithmic line was clearly indicated by fleets in which vehicles of different gross weights operated under more or less similar conditions. The smallest of the six groupings, representing metropolitan delivery vehicles for the most part, had a higher than average cost representing a very short mileage life for the tires. A curve fitted to the remaining points showed a somewhat excessive mileage life when checked against tire price. The curve adopted for all groups, resulting from a weighted, average coefficient, appears to be reasonable in this respect. It represents the equation:

$$\text{Tire cost, cents per mile} = 0.000222\ (\text{gross weight, lbs.})^{0.9}$$

Based on 1933 list prices to retail consumers, tire price may be related to average gross weight, thus:

$$\text{Tire price, dollars} = 0.006805\ (\text{gross weight, lbs.})^{1.15}$$

Discounts to fleets, however, are from 10 to 20 percent of list retail prices.

Driver's and driver's helpers' wages were so closely related to mileage compared to other things that they are here considered a mileage charge. In practice this will work out as such except in terminal operations where loading and unloading time and other truck delays result in very low mileages. The vehicle usually incurs no driver charge when not on duty.

For-hire drivers averaged 6 cents per mile, and private drivers 8 cents per mile, throughout the weight ranges. The difference in annual mileage, however, very nearly equalizes the annual cost for any particular weight group.

Driver's helpers, on the other hand, averaged 2 cents per mile, which needs some interpretation in view of the fact that all vehicles do not use helpers and the larger vehicles have greater helper requirements than the smaller ones.

Driver wage data were received for 11,194 trucks. Of these 1,238 furnished helper wage data.

Group (Gross Weight)	Trucks Requiring Drivers	Trucks Requiring Driver's Helpers	Percent Requiring Helpers
Below 5,000 lbs.	559	70	12.5*
5,000 - 9,999	5,567	287	5.2
10,000 -14,999	2,556	295	11.5
15,000 -19,999	1,484	193	13.0
20,000 -24,999	402	117	29.1
25,000 and over	626	276	44.1

On the basis of these percentages it was assumed that a definite percentage of the mileage of each vehicle should be charged with driver's helper expense. The average cost resulting from the table may be stated:

$$\text{Driver's helper expense, cents per mile} = 0.000020\ (\text{gross weight, lbs.})$$

The generalizations for fixed and variable license fees are:

$$\text{For-hire and private fixed fees, dollars} = 0.000013\ (\text{gross weight, lbs.})^{1.6}$$

$$\text{For-hire variable fees, dollars} = 0.0000056\ (\text{gross weight, lbs.})^{1.6}$$

Dividing the latter by the annual mileage per for-hire truck will yield the following equation:

$$\text{For-hire variable fees, cents per mile} = 0.000001\ (\text{gross weight, lbs.})^{1.2}$$

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* Delivery group.

In order to translate average costs of moving a particular load a given distance for purposes of comparison with the charges or costs of similar movement by rail (analyses 49.7 - 49.14), two important adjustments must be made. The first requires the segregation of terminal and line-haul costs and the elimination from truck costs of elements not present in the rail carload costs, such as loading and unloading at origin and destination. Since it is contemplated that truck loads comparable with rail carload movement would be picked up and delivered by the line-haul vehicle, station clerical and miscellaneous and platform charges should also be eliminated. The second adjustment requires a relation to be established between the particular load and the average gross weight of the vehicle, which may be accomplished for all loads and their average gross weights by a translation of the composite costs of for-hire trucks into an equation relating them to the weight of the load rather than to gross weight.

The questionnaire on per truck performance and cost data did not separate pick-up and delivery and other terminal expenses from items of general overhead. The motor truck survey questionnaire to which it was appended did, however, elicit more or less complete reports on terminal costs from 114 operators which revealed this item to be consistently close to 13.41 percent of total operating costs.

Gross Expense Group, Dollars	Number of Concerns	Total Operating Costs, Dollars	Terminal Costs, Dollars	Terminal in Percent of Total Costs
Below 10,000	20	88,850	9,344	10.52
10,000 - 24,999	7	5,545,329	796,059	14.36
25,000 - 49,999	12	3,471,389	463,449	12.57
50,000 - 74,999	16	2,286,696	313,834	13.72
75,000 - 99,999	14	1,207,001	121,033	10.02
100,000 -199,999	10	594,376	78,321	13.18
200,000 -499,999	17	697,253	84,536	12.12
Over 500,000	18	298,470	36,609	12.27
All Operators	114	14,189,364	1,903,185	13.41

These terminal expenses include the truck expense involved in pick-up and delivery representing approximately 33.84 percent, and terminal rental representing another 7.55

percent of the total terminal costs.* There remains 58.61 percent of the terminal, or 7.86 percent of the total operating costs as terminal expense to be deducted from average truck operating costs before the segregation of terminal and line-haul costs may be made.

Applying the total deduction to the fixed costs leaves a remainder which is closely approximated by the equation:

$$\text{Net fixed cost per day, cents} = 89.41 + 121.05\,(\text{load, tons})^{0.6}$$

Variable costs may be expressed in a similar equation, thus:

$$\text{Variable cost per mile, cents} = 7.6771 + 3.9434\,(\text{load, tons})^{0.6}$$

The load in both cases represents the manufacturer's allowable load, the assumption being that though empty mileage would bring the average load throughout the year's mileage down to normal, the particular load would exceed the rated capacity within the load limits of the chassis.

The terminal costs, under the expected conditions, may be obtained by (1) multiplying the fixed cost per working day by the time spent by the vehicle in the terminal operations expressed as a fraction of the working day, and (2) adding to this product the variable cost per mile multiplied by the vehicle mileage spent in the terminal operations.

The line-haul cost may be stated as (1) the fixed cost per day multiplied by the time spent in the haul, expressed as a fraction of the working day, and (2) added to the product of the variable cost per mile multiplied by the mileage traveled in the line-haul.

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* Studies by C. G. Anthony of the Motor Freight Terminal Company of California revealed truck costs, including driving expense, to be 69.27 percent of pick-up and delivery costs. Exhibit 117B of the Merchandise Traffic Report, 1934 Federal Coordinator of Transportation, shows the average pick-up or delivery expense to be 85.39 cents per ton, or 48.85 percent of the total terminal expense per ton at origin or destination. It also shows terminal rent to be 13.20 cents per ton, or 7.55 percent of the total expense per ton at origin or destination.

The total cost will be the sum of the terminal and line-haul costs and for any set of conditions may be expressed algebraically as follows:

$$C = F\left(\frac{T_t}{W}\right) + V(D_t) + F\left(\frac{T_r}{W}\right) + V(D_r)$$

wherein

C = Total cost of truck movement, cents,
F = Fixed cost per day, cents,
V = Variable cost per mile, cents,
T_t = Time spent in terminal, hours,
T_r = Time spent in road, hours,
D_t = Distance run in terminal, miles,
D_r = Distance run on road, miles
W = Working day, hours.

It appears that under conditions of truck load haul the time spent in the terminal will normally total two hours per trip and the terminal mileage will total close to 15 miles per trip and that the working day for the performance of such truck hauls will usually cover 18 hours.

Normal road speed may be estimated at 20 miles per hour, with allowance for road delays outside of terminal areas. This is neither in disagreement with the 17.35 miles per hour average reported by truck operators for the completion of their runs,* nor with the 13.99 miles per hour average reported by shippers for movement of their truck shipments.# Runs longer than 250 miles in the former case were performed at an average speed of 21.22 miles per hour and shipments of more than 250 miles were completed in the latter at an average overall speed of 14.93 miles per hour. If the differential be accepted as terminal time and the greater weight of slow terminal mileage allowed in runs of less than 250 miles, 20 miles per hour appears to be conservative for the actual road-haul speed.

If these values for terminal time, terminal mileage, average road speed and working day be substituted in the above equation for total cost, and the two cost equations be substituted for F and V, the whole equation may be expressed as follows:

$$C = L^{0.6}(72.6010 + 4.2797\ D_r) + 125.0909 + 7.9255 D_r$$

This equation was employed in computations presented in analysis 49.6.

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* Exhibit 117 R, Merchandise Traffic Report.
# Analysis 20.1.

The foregoing presents costs in terms of manufacturer's allowable load for the average truck type. Its applicability depends on the relation established between the allowable load and average gross weight. This relation will vary, however, with the body type, since allowable load represents the difference between the maximum allowable gross weight of the vehicle and its load and the actual weight of the chassis and body. Since tank and van bodies, for example, will occupy a greater percentage of the gross load than will a light stake or rack body, the costs per ton of allowable net load will vary, though they will still conform closely in terms of gross weight.

In order to correct the foregoing cost formula so that it will reflect these changes in cost due to differences in body weight normal to different commodities, it remains merely to adjust the value of L by the amount by which the anticipated allowable load must be raised or lowered to make it equal to the average allowable load.

The allowable loads on which the average costs have been computed conform very closely to those permitted by the lightest body group, i.e., the rack, stake and box bodies. The heavier body groups in order are (1) the enclosed or panel group, (2) the van and tank group, and finally, (3) the refrigerated body group. The automobile hauler is a special type vehicle, quite standardized around a load of 4 small cars or 3 medium weight cars, the gross load being close to 22,000 pounds on the loaded trip and 10,000 pounds on the empty return.

Manufacturer data as to these body weights* were difficult to average according to rated capacity, and when the most plausible relations were derived they resulted in an extremely complex relation between the permitted loads and the load values for the stake, rack and box group used as the value L. However, the variety within each group warrants the following approximate substitutes for L in the cost formulas:

Panel Body	1.075L
Van or tank body	1.1125L+0.25
Refrigerator body	1.2L+0.5

The heavier bodies increase the transportation cost per ton and are likewise more expensive. Their life, however, is perhaps compensatingly long, and in any case they represent but a fraction of the total depreciation which would also tend to mitigate any real difference in cost.

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* Valuable information was furnished by Herbert Engemann, of the Sterrett Operating Service, Washington, D. C.

The load adjustments represent the perceptible effect of body types on costs. This effect has not been computed in the tabulations herein, because it is far within the range of deviations that will be present from myriad other causes.

XXII CARRIER FIXED PLANT

76. Necessity for Carrier Fixed Plant

77. Cost of Maintaining Fixed Plant

Railway Under the railway accounting system in effect in 1932, the cost of replacing worn-out or obsolete plants was included with the cost of repairs in practically all accounts, except the equipment accounts. For this reason it is necessary to consider maintenance as the cost of both repairs and depreciation (including retirements with the latter). Rail maintenance costs aggregated 40 percent of the total cost or over 3,200 per mile of route.* From a location standpoint they group into the cost of maintaining the roadway and operative structures, stations and wharves.

In 1932 rail expenditures for maintenance of roadway aggregated $940 per route mile, or 108 percent below the average expenditure of the 12-year period. This difference was due in part to actual deferment of the maintenance obligation, in part to lower labor and material costs, but chiefly, it is believed,to the reduction in the amount of the obligation itself because of reduced use and more intensive supervision by management. This appears from examination of the service unit costs. The average roadway maintenance cost amounted to $8.41 per car and 35 cents per ton of freight originated; 58 cents per train mile and 2.2 cents per loaded car mile. These costs were somewhat lower than comparable costs for the 12-year average. Among the rate territories, the highest roadway maintenance cost per car mile was found in New England,3.0 cents, and the lowest in Pacific Southwest, 1.8 cents.#

Maintenance of stations and wharves in 1932 were relatively minor matters, amounting only to $56 per route mile.

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* Analysis 75.4.

# Analyses 77.2 and 3.4.

Station maintenance per route mile was quite subnormal, being but 45 percent of the 12-year average. The average cost per car originated in 1932 was 34 cents, compared with 48 cents over the 12-year period.*

Waterway Reporting carriers who owned their terminals spent in 1932,$2,200,000 for maintenance of such properties. This amounted to 1.7 percent of total freight operating expenditures and 10 percent of total maintenance expenses. Common carriers spent $2,100,000 for maintenance of owned terminals, which was 1.9 percent of common carriers' total expenditures, and 11.4 percent of their maintenance expenses. Contract and private carriers reported very insignificant amounts for maintenance of owned terminals, their expenditures being $9,000 and $15,000, respectively. For private carriers this amounted to 1 percent of their maintenance expenses, while for contract carriers it amounted to less than .3 percent of maintenance expenses. In both instances the percentages of total freight expenses were but a small fraction of 1 percent.#

Expenditures for the use of terminal facilities on a wharfage or dockage basis amounted to $2,000,000. This item was 1.5 percent of total freight expenses and 9 percent of total maintenance expenditures. Common carriers incurred expenditures of this class amounting to $1,900,000, which was 1.7 percent of their total expenses and 10.1 percent of their total maintenance expenditures. Contract carriers spent $80,000 for wharfage and dockage, which was .6 percent of their total expenditures and 3.8 percent of their total maintenance expenses, while private carriers spent $34,000, which was .4 percent of their total freight expenditures and 2.2 percent of their total maintenance expenses.#

Maintenance of terminal facilities and percentages of total expenses and of maintenance expenses for the various classes of carriers by districts for the year 1932 were - Atlantic Coastwise and Inland common carriers $871,000 or 3.7 percent and 19.5 percent; others $1,000 or .02 percent and .1 percent; Atlantic Gulf common $375,000 or 2.5 percent and 9 percent; Intercoastal common $493,000 or 1.2 percent and 9.9 percent; others $14,000 or 4.3 percent and 15.7 percent; Inland Waterways common $284,000 or 3.5 percent and 13.7 percent; Great Lakes common $67,000 or .8 percent and 4.9 percent; others $9,000 or .06 percent and .4 percent; and Pacific Coast common $48,000 or .4 percent and 3.2 percent.ø

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* Analyses 77.2 and 3.4.

# Analysis 77.1.

ø Analysis 77.3.

Wharfage and dockage paid and percents of total freight expenditures and of maintenance expenses by classes of carriers by districts in 1932 were - Atlantic Coast common $284,000 or 1.2 percent and 6.4 percent, others $69,000 or 1.6 percent and 7.3 percent; Atlantic Gulf common $848,000 or 5.6 percent and 20.5 percent; Intercoastal common $327,000 or .8 percent and 6.6 percent; others $23,000 or 7.2 percent and 26.3 percent; Inland Waterways common $185,000 or 2.3 percent and 8.9 percent; others $700 or .2 percent and 1 percent; Great Lakes common $99,000 or 1.2 percent and 7.2 percent; others $21,000 or .1 percent and .9 percent; and Pacific Coast common $135,000 or 1.1 percent and 9 percent; others $100 or .02 percent and .2 percent.*

Maintenance unit costs are shown on analysis 77.3. The units used are route miles, schedules, net tons, schedule hours, schedule miles, ton miles using rail distances, and ton miles using water distances.

Petroleum The maintenance cost of petroleum pipe line transportation in the United States in 1932 amounted to over 48 million dollars, representing a ratio of maintenance to revenue of 23 percent. This represented a route mile maintenance cost of $521 per pipe line route mile, 58 cents per net ton of traffic originated and 1.5 mills per net ton mile.#

XXIII TRANSPORT POWER

78. The Problem

79. Capacity of Transport Power

Railway The power capacity of American railways depends on many factors other than the tractive effort of the locomotives employed, some of which are grade, alignment, traffic balance, speed, daily utilization and mileage between general shoppings - each of which must be weighted with respect to the distribution and character of the traffic handled. A theoretical capacity based upon average tractive effort, gradient, curvature and speed, if the latter characteristics could be weighted, might prove misleading.

Average power capacity, gauged by the conditions which persisted in 1932, can be appraised. In 1932 there were 31 thousand road freight locomotives. Fifty thousand serviceable miles per locomotive per year appears to be the maximum average attainable with present power, and under present

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* Analysis 77.3. # Analysis 77.1.

operating conditions and methods.* The largest average load of recent years was obtained in 1929 when a load of 757 net tons per freight locomotive mile was reached. The total average capacity upon this basis of the 1932 supply of locomotives would be about 1,000 billion net ton miles, or twice the 1929 peak and four times the 1932 traffic.

Waterway Ton-mile capacities for the year 1932 were computed for reporting companies using the number of trips only that were made by each vessel during that year. No allowance was made for possible trips which could have been made had each vessel been in continuous operation during the entire season or year. For all reported waterline services a capacity of 115 billion ton miles was indicated. Ton miles of service performed amounted to 53 billions, or 46 percent of capacity. Common carriers had a capacity of 74 billion ton miles and utilized 33 billion or 44 percent. Contract carriers had a capacity of 24 billion ton miles of which 16 billion or 67 percent were utilized, while for private carriers the figures were 17 billion capacity and 4 billion or about 25 percent utilization.#

In the Atlantic Coast district. reporting common carriers had a capacity of 9,080 million ton miles and service performed amounted to 1,989 million, or 22 percent. In this district, reporting contract and private carriers had a capacity of 3,864 million ton miles of which 2,179 million, or 56 percent, were utilized.ϕ

In the Atlantic Gulf service, the ton-mile capacity of common carriers was 11,617 million of which 3,390 million, or 29 percent, were used; and other carriers had a capacity of 1,828 million ton miles of which 986 million, or 54 percent, were utilized.ϕ

In the Intercoastal trade, common carriers had a capacity of 41,506 million ton miles and used 22,880 million, or 55 percent. Other carriers engaged in this trade had a capacity of 903 million ton miles of which 289 million, or 32 percent, were utilized.ϕ

On the Inland Waterways, the ton-mile capacity of common carriers was 4,882 million and their utilization was 2,367 million, or 48 percent, while other carriers in this district had a capacity of 1,400 million ton miles and used 643 million, or 46 percent.ϕ

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* Based on an average utilization of 10 hours per serviceable day (in October 1920 it reached 9 hours) a speed of 16 miles per hour (1932 average) and 312 serviceable days per year.

# Analysis 70.1.

ϕ Analyses 70.2 and 70.3.

On the Great Lakes, common carriers had a capacity of 5,053 million ton miles of/which 1,284 million or 25 percent were used. Other carriers in this district had a capacity of 32,423 million ton miles and utilized 15,888 million or 49 percent.*

On the Pacific Coast, the ton-mile capacity of common carriers was 2,117 million of which 962 million or 45 percent were used and other carriers had a capacity of 400 million and a utilization of 66 million or 17 percent.*

80. Cost of Maintaining Transport Power

Railway The unit cost of total power maintenance in 1932 was only slightly subnormal, being 52 cents per train mile, compared with 67 cents over the 12-year period. The cost in 1932 amounted to 2 cents per loaded car mile. The highest unit maintenance cost was found in Trunk Line Territory, where it was $11.53 per train hour, 83 cents per train mile, 2.6 cents per loaded car mile and .35 mills per gross ton mile. The lowest was in the Southwestern Territory, $6.36 per train hour, 37 cents per train mile, 1.7 cents per car mile and .24 mills per gross ton mile.# Among the classes of trains, the lowest cost was found in the branch line way freight, handling an average of only 8 cars or 667 gross tons, where road power maintenance averaged 22 cents per train mile. The highest cost was found on the heavily loaded manifest train, averaging 2,123 gross tons, at 44 cents per train mile. The lowest average cost - about 20 cents per train mile - was found in the case of branch line way trains in Central (average load of 764 gross tons); Western Trunk Line (567 gross tons); Southwestern (651 gross tons); and Pacific Northwest (579 gross tons). The highest average cost - 65 cents per train mile - was found in main line manifest trains of Trunk Line for trains handling an average load of 2,983 gross tons.ø

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* Analyses 70.2 and 70.3. # Analyses 77.2 and 3.4.

ø In the inquiry the carriers were asked to apportion the cost of power maintenance between classes of trains and in cases where direct allocation was impossible, upon the basis of gross ton miles. The cost of power maintenance distributed upon this basis is shown in analysis 80.1. This basis of apportionment has been criticized (and, we are convinced, correctly criticized) because it assumes perfect adjustment of load and capacity and thereby throws undue cost on the heavier loaded trains. Since the carriers furnished the gross ton miles both including and excluding the weight of locomotive, it was possible to redistribute the cost between classes of trains upon a locomotive ton mile basis, which was done and is shown in analysis 80.2. The costs stated in the text in paragraph 80 are those computed upon the latter basis, but in all subsequent paragraphs and analyses dealing with road costs as a whole, the original distribution made in the returns upon a gross ton mile has not been disturbed.

Petroleum Power maintenance expense of petroleum pipe line companies in 1932 amounted to 15 million dollars which was 7 percent of the revenue earned, amounted to $162 per route mile and represented an expense of 18 cents per net ton originated and of .5 mills per net ton mile. Station expenses of petroleum pipe line companies amounted to 4 million dollars, a ratio of 2 percent of the revenue earned. This represented a maintenance expense of $43 per route mile and 5 cents per net ton originated. This was equivalent to station maintenance costs of .1 mill per net ton mile.*

81. Modernization of Transport Power

Power The basic requirements for modern power were taken to be: (1) Reduction and elimination of terminal handling where possible; (2) providing fast, light-weight, frequent local freight train service, through container power cars as standard equipment; (3) localizing or decentralizing truck operation through collection and delivery service, trucking of exceptional traffics, railhead distribution for direct highway transport; (4) power equipment with low first cost and low operating and maintenance cost.

The manufacturers, therefore, were requested to submit proposals generally complying with the following specifications:

Motive Power Equipment

1. Speed - 60 M.P.H. on straight level track, with load and gross trailing load as specified.

2. Power container car, double truck, steel or equivalent throughout, with control cab or engine room at one or both ends of unit, back of which, or between control cabs or engine rooms, will be a clear platform space, varying from 20, 29, 34 to 42 feet for loading 2, 3, 4 and 5 containers, plus additional length for bumper and other A.A.R. requirements.

3. Locomotive, double truck, mechanical parts steel or equivalent, with control cab built in center of unit.

4. Containers to be transported were in two general sizes:

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* Analysis 77.1.

Small Container - 8' x 8' x 10' capacity 25,000 pounds; Tare - 3,500 pounds.

Large Container - 8' x 8' x 20' capacity 50,000 pounds; Tare - 6,500 pounds.

The proposals of the manufacturers are summarized in three analyses: 81.1 Power Cars, all prime movers; 81.2 Steam Locomotives; 81.3 Diesel-Electric and Diesel-Mechanical Locomotives.

Power cars were considered for this study, built to haul containers 8' x 8' x 10' weighing, loaded, 28,500 pounds, each with a tare weight of 3,500 pounds, placed transversely across the car width and four inches apart, making the container power car take the form primarily of a flat car with an operating cab at one or both ends, depending upon the characteristics of the service in which the car would be operated.

These power cars also were to be capable of hauling two or more trailers on straight level track at a maximum sustained speed of 60 miles per hour, with trailing loads as high as 500 tons gross.

The condition was considered where a power car might not have a container load, thus all the weight of the power plant, plus the fuel and water tanks, have been placed over the power truck, in order to secure ample starting adhesion. As soon as the speed of a few miles per hour is attained, one axle will give all the tractive effort required, but usually, of course, there are two axles powered.

Since these cars are primarily for high speed service, little tractive effort is needed at low speeds. With roller bearings used on these and on trailing container cars, the tractive effort necessary for the so called "break-away" will not necessarily be required. Even with slippery rails, by using sanders, these power cars would have ample tractive effort to start a train twice as heavy as they can pull at high speed.

In this design it was found entirely unnecessary for the light weight type of power plant used to sacrifice the pay load, which could be carried chiefly on necessary second or trailer truck. In power units of less than 2,000 horsepower, the dead weight of a separate locomotive would prove an unnecessary expense, both from the standpoint of first and operating cost, not to mention the fact that if a separate locomotive be used, increased horsepower would be necessary and considerable dead weight would have to be added to the frame.

Proposals for these cars and estimated performance and expense data are summarized in analysis 81.1. Manufacturers' submissions follow:

Automatic Gear Corporation

One 60-ton, 400-h.p., four-container power car with crew quarters; equipped with two 200-h.p. pancake engines, automatic gears and clutches; has raised operating cab and is arranged for operation in either direction.

Besler Systems

Four-container, 280-h.p. Diesel-Mechanical power car equipped with two 140-h.p. Diesel engines and mechanical transmission.

Four-container, 500-h.p. steam power car equipped with high-pressure steam generating plant and engines.

Four-container, 1,000-h.p. steam power car equipped with high-pressure steam generating plant and engines.

J. G. Brill Company

Four designs of container cars of various capacities, using gasoline engines with mechanical drive.

A. K. Brumbaugh

Hydraulic-Mechanical Drive container car with gantry crane; equipped with two Diesel engines and "fluid flywheel" clutches.

Clark Equipment Company

35-ton, five-container car equipped with two 285-h.p. ignition injection, Diesel engines and Turbo-Hydraulic Drive.

Electro-Motive Corporation

Two, three, four and five-container Diesel-Electric power cars.

Four-Wheel Drive Auto Company

High-speed freight tractor equipped with one 250-h.p. Diesel engine with all-mechanical transmission.

Ingersoll-Rand Company

Three-container power car equipped with a 530-h.p. Diesel engine and electrical equipment.

Mid-West Locomotive Works

45-ton carrying capacity (30-ton light-weight) Diesel Hydraulic-Mechanical driven freight motor power car, equipped with one 400-h.p. Diesel railway type engine, capable of a maximum speed of 60 miles per hour.

50-ton carrying capacity Diesel Hydraulic-Mechanical driven freight power car equipped with two 265-h.p. Diesel railway motors. Maximum speed 60 miles per hour.

60-ton carrying capacity (40-ton light-weight) Diesel Hydraulic-Mechanical driven freight power car, equipped with two 265-h.p. Diesel railway engines. Maximum speed 60 miles per hour.

75-ton carrying capacity (50-ton light-weight) Diesel Hydraulic-Mechanical driven freight power car, equipped with two 400-h.p. Diesel railway motors. Maximum speed 60 miles per hour.

Jaray Streamline Corporation - (Brown Gurney Engineers)

Six-container, 700-h.p. Diesel-Mechanical power car equipped with five 140-h.p. Diesel engines and mechanical transmission.

Linderman Devices, Inc.

One-container car design for four containers (57 gross tons) equipped with two 200-h.p. Diesel engines and Linderman selective railcar transmission. Cars up to 1,000-h.p. can be built with this transmission.

Ryan Car Company

Two, three and four-container 500-h.p. steam power cars, equipped with high-pressure steam generating plant and uni-flow engines.

Five-container, 1,000-h.p., steam power car equipped with high-pressure steam generating plant and uni-flow engines.

Westinghouse Electric and Manufacturing Company

Five-container power car equipped with a 530-h.p. Diesel engine and electrical equipment.

Utility of Single Car (Container) Units

Inherent operating economies which are possible with container power cars are not to be found in other types of motive power units, as is shown by the operating costs in analysis 81.4 et seq.

Cost Data - Single Car Container Units

Cost	Containers	Weight	B.H.P.	Cost Per Pound	Cost Per B.H.P.	Weight Per B.H.P.
		Double-Truck Diesel-Electric				
$40,000	3	131,500	530	$0.304	$75.50	328
50,000	5	115,000	530	0.435	84.60	217
		Double-Truck Steam				
$40,000	4	70,000	500	$0.573	$80.00	140
47,000	2	120,000	500	0.392	94.00	240
49,000	3	130,000	500	0.377	98.00	260
51,000	4	140,000	1,000	0.365	51.00	140
60,000	4	75,000	1,000	0.800	60.00	75
		Double-Truck Diesel-Mechanical				
$42,500	4	54,000	400	$0.785	$106.00	135
18,750	4	66,000	280	0.284	67.00	235
25,000	4	52,000	400	0.480	62.50	130
32,775	6	79,000	700	0.414	46.80	113
28,000	5 (Hydr)	70,000	570	0.400	49.00	123

Steam. Some builders were in a position to submit locomotives that might be used for the higher tonnages; namely, 500 tons gross trailing load at a sustained speed of 60 miles per hour on straight level track. However, this type of unit could only be used where there was sufficient traffic density to warrant capital investment necessary to secure such motive power, and its required auxiliary facilities.

Experience with central stations, industrial plants, and with new types of locomotives has demonstrated the soundness of the general trend toward higher steam pressures. The expected economies have been realized, and the day of high pressure steam power plants has arrived.

To secure the advantages of steam motive power, an entirely new type of unit was developed for this study; namely, the use of the booster type - or auxiliary type locomotive. These are proposed to be used under a platform type of construction with a car or an electric locomotive type cab and body for carrying the high pressure steam generating plant and condensing equipment, using one booster locomotive truck to meet some conditions, and two trucks for others. This unit will be capable of operating at a maximum sustained speed of 60 miles per hour on a straight level track, with tonnages varying from 100 tons to 500 tons gross trailing load, and as high as 1,000 tons at 35 miles per hour.

Submissions by manufacturers follow:

The Baldwin Locomotive Works - Three conventional steam locomotives were submitted of the 4-4-0 type with tonnage capacities of 150, 300 and 500 gross tons at 50 m.p.h., - maximum speed 60 m.p.h.

Bethlehem Steel Company - Here the booster or auxiliary type of locomotive trucks are built into a transportation unit with either two booster or power trucks; or one booster or power truck and one auxiliary power truck, under a box type of electric locomotive body housing the steam generating and condensing plants.

Four types of units were submitted:

1. Two power trucks with four wheels, 42" in diameter and 12" x 11" cylinders with proper gear ratio. The trucks of this locomotive unit would have a permanently connected gear drive and would be used for high-speed service, being provided with two cut-offs, 70 percent and 35 percent. Weight of complete power unit 190,000 pounds.

2. One power truck and one auxiliary power truck with four wheels, 42" in diameter, and 10" x 11" cylinders with proper gear ratio. This locomotive unit would have use of the auxiliary truck for starting purposes and for acceleration up to 30 miles per hour since the auxiliary truck would have a fixed cut-off of 70 percent. Then the power truck, with a horsepower of 481, would be able to handle train after starting up to 60 m.p.h. at 70 percent cut-off. Weight of complete power unit 190,000 pounds.

3. Two power trucks similar to those used in No. 1, except that they would have three pairs of wheels, since this type would be used for heavy axle load. Weight of complete power unit 200,000 pounds.

4. One power truck and one auxiliary power truck similar to unit under No. 2, except that they would have three pairs of wheels, and the auxiliary power truck would be used for starting and acceleration. Weight of complete power unit 200,000 pounds.

Besler Systems - High-Pressure Steam Power Plants - The general plan behind equipment submitted includes the use of multiples of the same unit for steam operation. An exception is the engine for the locomotive type, which may have two power trucks, such as would be placed under one end of the baggage or express car to be converted, which is included in this study; or, as indicated, with gear ratios permitting greater speed than is usual for switching.

These power trucks constitute a feature which can be used to advantage by the railway operator, at the same time permitting quantity production and utilization, thus assisting in lowering the first cost, as well as simplifying and cheapening the service and maintenance required.

Although all the steam power plants herein included are designed to burn oil, a suitable boiler has been developed and already extensively used in Europe, which can burn coal; namely, the Woolnough type of boiler. From recent developments, a successful means of burning coal or powdered coal could be quickly developed for the standard type of boiler herein specified, in the event there be a demand. This demand would be inevitable if a very large number of these units should be desired, as there are certain districts in the United States wherein, except for passenger cars, the use of oil would not only be uneconomical, but contrary to the spirit of the inhabitants to burn other than coal.

The following power units were submitted by Besler Systems:

1,000-H.P. High-pressure Steam Railcar Conversion Unit.

500-H.P. High-pressure Steam Railcar Conversion Unit.

1,000 and 2,000-H.P. High-pressure Steam Switching and Road Locomotives.

La Mont Corporation - High-pressure Steam Power Cars and Streamlined Trains. The motive power units submitted incorporating the La Mont steam generator are as follows:

1. High-pressure steam generating plant in conjunction with a General Electric turbo-electric generator, which in turn furnishes power to electric railway motors on the traction or power trucks.

2. High-pressure steam generating plant with American Locomotive compound condensing engines on the power trucks.

3. High-pressure steam generating plant with Bethlehem Steel Company "Booster" type simple engines on power trucks.

These types of power units are particularly well adapted to rail power car or high-speed streamlined train service. The La Mont System of steam generation, due to its being based on controlled forced circulation by the use of orifices, makes possible the use of smaller tubes with thin walls, therefore resulting in a compact steam boiler plant of lighter weight, greater economy and high efficiency. Being symmetrical in design, this system lends itself to a variety of applications, which can be met by a low initial cost, as well as low maintenance, especially with the condensing unit.

Lima Locomotive Works, Incorporated - Four designs of steam locomotives, handling trains up to 500 tons gross weight, were submitted.

A double end locomotive of the 4-4-0 type, in which a separate tender is dispensed with and the water and fuel are carried in side tanks and on the rear truck, was one recommendation. Very careful attention was given to the necessity of reducing the length of time at terminals, and it was for this reason that the double end locomotive was recommended, as it would avoid the necessity of "turning".

In addition to reducing the time at terminals, it was also considered that in speeding up the operation rapid acceleration was essential. Thus, the booster locomotive was provided, the tractive power of the main cylinders being 26,300 pounds, and the tractive power of the booster being 34,800 pounds. Undoubtedly, a locomotive of this type on secondary or branch lines, where fairly substantial grades might be encountered, with the booster added to the unit, would be of tremendous value in handling trains over these grades.

The Ryan Car Company - Ryan Locomotor - The Ryan Locomotor power plant is so compact as to permit its installation in a dozen feet of space in an ordinary railroad car. This is due to its ability to burn its fuel in small space, and burn it completely; to its ability to manufacture steam as fast as it is demanded without the necessary storing of large volume; and to the high-pressure temperature of its steam.

Condensing arrangements remove the necessity of carrying a large water supply, the water being used over and over again. It is operated by one man with controls familiar to every locomotive engineer.

The Locomotor type of motive power unit accentuates the economy possible for motor cars on branch lines of steam railroads, and due to its high efficiency and compactness of power plant makes it possible to haul trains of standard cars on main lines as well as on branch lines.

Each axle of a power truck is equipped with an eight-cylinder uni-flow poppet valve steam engine. It operates on less than eleven pounds of steam per horsepower hour.

The design submitted incorporating the principles of Locomotor has a total capacity of 1,000-H.P.; road type of Locomotor, equipped with two 500-H.P. engines, geared for 50 m.p.h., and capable of trailing 500 tons gross.

Utility of Small Steam Locomotives

Of the steam units submitted those with engines built into each truck (which acts not only as a traction truck but as a supporting truck for the locomotive body with its steam generating and condensing plants) are the most practical of the locomotive type units. These will very effectively meet the requirements of this study because of (1) low first cost; (2) low operating cost; (3) low maintenance cost; (4) power trucks quickly removable; (5) large number of parts interchangeable; (6) high availability; and (7) possibility of simplifying engine terminals.

Cost Data - Small Steam Power Units

Locomotive Type (Double-Truck)

			Cost Per		Weight
Cost	Weight	B.H.P.	Pound	B.H.P.	Per B.H.P.
$85,000	240,000	2,000	$0.353	$42.50	120
75,000	170,000	1,000	0.430	75.00	170
35,000	100,000	962	0.350	36.40	103
35,000	100,000	735	0.350	47.60	103

Diesel-Electric. Long before James Watt constructed his crude atmospheric engine - before the early beginnings of steam power as we know it today - scientists had already suggested that useful work might be accomplished by exploding gunpoweer in a closed vessel. It was only after the steam engine and the steam turbine were developed to high economy that engineers, reaching out for still higher economies, turned again to the internal combustion motor. Today industry is just beginning to appreciate the possibilities offered by oil engine power, and to concede to internal combustion engines their rightful place among prime movers.

When Dr. Rudolph Diesel came into the field, gas engines, gasoline engines, oil engines had found their way into many industries. They were fairly economical, generally reliable, but not unfailing prime movers. They were single-acting and double-acting, horizontal and vertical; they utilized two-stroke and four-stroke cycles.

The many disappointments during the early development of the Diesel are a matter of history. Still, the economy promised by the Diesel heat cycle made concerted efforts along the right lines inevitable, and the matter of reliability was only a question of time.

The growth of the Diesel industry has been phenomenal. In the United States, for example, the first Diesel engine was introduced in 1898 by Adolphus Busch. Four years later, in 1902, the first Diesel central station was constructed. From then until 1913, the development was slow, but when the Diesel patents expired, and the ideas proposed in them became public property, the time was ripe for intense activity.

At that time (1913) the total annual Diesel horsepower turned out in this country approximated only ten thousand. Today, we have over five million five hundred thousand Diesel horsepower operating in the United States.

In Europe, developments within the last ten years have been fundamental in shaping the fast crystallization of Diesel railway operation throughout the British Empire and Continental Europe. Here the small Diesel-Electric or Diesel-Mechanical drive is to be found in capacities of 85 to 100-b.h.p. per car, which was generally influenced by the two-axle motor car. Today, we find an approach where American operating demands begin; namely, 410-b.h.p., supercharged to 600-b.h.p.

In the United States, the Diesel engine, built or mounted on the car truck with an electric generator or mechanical drive, as in daily use in Europe, is generally unknown. In British practice it has become common to not only mount the power plant and transmission equipment on the car trucks, but to also fasten it on the underframe of the car body.

Also, due to the desirability of making railway motor trucks interchangeable, so as not to hold equipment out of service, there has been developed in Europe a definite trend for placing engine and transmission all on the power truck, be it mechanical, hydraulic or electric type. The most recent installation of this type is a 600-h.p. Maybach engine with Voith hydraulic transmission, placed in the motor truck of one of the "Flying Hamburgers". The control engine and hydraulic transmission equipment weigh approximately 20,000 pounds.

Among the outstanding Diesel railway engines found in Europe are -

	Cylinders	B.H.P.	R.P.M.
Mercedes-Benz	12- "V"	330	1,700
Beardmore	6	225	1,200
Renault	12	300	1,500
Renault	16	500	1,500
Maybach	12- "V"	*410	1,400
A.E.C.	6	130	2,400

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* Supercharged to 600-B.H.P.

The Mercedes-Benz and Maybach engines are used on the German State Railways, while the Renault engines are used on the French State Railways, and the A.E.C. engines by the Great Western Railway of England, two engines per car.

Diesel power for railway propulsion has been used for a period of scarcely over ten years in the United States, at first very much in an experimental stage, and now made commercially possible through the development of the Diesel-Electric locomotive, the Diesel-Electric passenger railcar and the streamlined train; latest practice to be found in the "Comet" of the New Haven System with a power plant at each end of the train.

However, the high cost of such equipment as developed in its present form precludes its extensive use as an immediate aid from the standpoint of increased revenue and low capital investment.

In the United States the Diesel-Electric power equipment has taken on the general conventional form of the mechanical parts as used for electric locomotives, as well as that of the heavy baggage, express, or passenger car type of construction. All Diesel equipment, being of electrical transmission type, the complete power plant is housed up in the carbody or locomotive cab in its own engine room.

While the extensive application of the internal combustion engine to various modes of transportation has been outstandingly successful, the exacting demands of railway operation require a special type of engine. The gasoline engine is rapidly giving place to the modernized Diesel engine, because of the latter's lower fuel consumption and minimized fire risk characteristics. At the same time, it has been found necessary to especially design a Diesel type railway engine in various forms from the standpoint of the railway operator as well as the engine manufacturer.

In the early development of the Diesel railway engine, it was found that an ideal type of engine would be one that, to a certain extent, embodied the general performance characteristics of both submarine and airplane engines, as well as include some of the constructional design features from the standpoint of light weight, and yet retain sufficient ruggedness.

Power for railway operation must always be supplied in a sufficient quantity, and thus it is highly necessary to build engines with enough horsepower capacity to enable securing an excess per train horsepower capacity, insuring longer engine life. After a railcar or motor train has been accelerated in making a main line run with few stops, properly engined it will have an excess horsepower capacity. But when it starts operating on the branch line part of its run, with frequent starts and stops, this excess power permits safe operation without damage to engine equipment, thus keeping maintenance low.

The above is of prime consideration in the design of a Diesel railway engine. Many early types have been found to be of short life, conducive to high maintenance, because experience had not dictated building engines large enough to secure excess capacity, either for single or multiple engine equipment.

While the Diesel railway engine has been confined to 100, 175, or 180 horsepower for a number of years, the change in economic conditions has accelerated this development and complete steam train services have had to be replaced with railcars or motor trains which require greater engine unit horsepower. Thus engines of 200, 300, 350, 410 and 500 horsepower capacity are now available for mounting on the car truck or upon the frame inside the car for mechanical, hydraulic and electrical transmissions. And these, in turn, are used in multiples to give the higher power, or total train engine capacity.

With the type of electrical transmission where the complete power plant is mounted inside the power car or locomotive body, engine capacities range from 300, 600, 900 to 1,200 horsepower, multiples of which are combined to increase the total capacity.

While the thermal efficiency of the steam locomotive operating at full load is approximately 7 percent, in actual service its efficiency would drop to approximately 3 percent. Under full load conditions the efficiency of a Diesel-Electric locomotive is approximately 3 1/2 times that of the steam locomotive when operating under the same conditions. In actual service where the load varies, making it necessary to vary the rate at which the coal is burned on a steam locomotive, the efficiency of the Diesel engine is approximately 6 times that of the steam engine.

Under full load conditions on the Diesel-Electric locomotive, the energy represented by the heat stored in the fuel is dissipated as follows:

	Fully Loaded Percent	Average Loading Percent
Engine Exhaust	33.0	36.0
Engine Cooling Water	33.0	36.0
Locomotive Auxiliaries	3.0	4.0
Loss in Electrical Transmission	5.0	6.0
Available for useful work	26.0	18.0

The electric transmission on a Diesel locomotive consists of an electric generator, driven directly by a Diesel engine, and an electric motor geared to each axle, the same as on the familiar street car.

Such a transmission eliminates all shifting of gears, and inherently gives an infinite number of "shifts" until it goes into "high". It permits through the use of the electric railway motor a high starting tractive effort and high acceleration.

Diesel-Electrics have proved their worth in yard service. In general, switching power is in the poorest condition of all classes, due, not only to actual age, but also to the practice of using outgrown road locomotives for switch engines. Normally, this latter practice results in high operating costs.

Two 4-wheeled Diesel-Electric trucks with relative low axle loading permit safe operation on the curves and trestles of industrial sidings, as well as main line railroads, and these trucks will go anywhere a box car can go.

In this service the overall thermal efficiency of the Diesel locomotive is 25 percent; of the steam locomotive 2 percent. The fuel burned by the Diesel-Electric locomotive costs 4 1/2 to 5 cents a gallon. Coal burned by steam locomotives costs $2 to $4 a ton, which means that in the average switching service, the fuel cost for the Diesel locomotive is only 25 percent of that of the steam locomotive. The availability for service of a Diesel-Electric locomotive is from 80 to 90 percent, of the steam locomotive 50 to 60 percent. In switching service the horsepower rating of the Diesel-Electric locomotives will average 50 to 60 percent of that of a comparable steam locomotive. Studies in switching service show consistent savings in operating costs, including fixed charges of 20 to 40 percent in favor of Diesel-Electric locomotives.

Transfer service consists normally of collecting a string of cars, assembled in switching service and moving them from one yard to another, or to various terminals. Based on freight economy, transfer service is the marginal operation, which may or may not justify the replacement of steam power with Diesel power. Many a time the transfer locomotives have a preponderance of switching service that can justify the use of Diesel power. With the preponderance of transfer work at relatively high speeds, the steam locomotive is favored. It is not until speeds of ten or more miles per hour are reached that the full horsepower of the steam locomotive is developed. The power demand in transfer service ranges from 800 to 1,600 horsepower.

For the use of Diesel locomotives for the existing standard equipment, the following factors govern; namely, (a) smoke elimination, (b) public demand, (c) water problem,

(d) traffic density, that lead to a consideration of complete electric operation using overhead trolley. The power demands in road service range from 1,600 to 4,400 horsepower.

Among the advantages claimed for electric transmission are: (1) Low maintenance cost; (2) less physical labor for engine men in control; (3) great overall efficiency in engine power utilization; (4) maximum tractive effort and maximum speed not a function of the engine; (5) simple to apply power to multiplicity of driving axles; (6) operation of auxiliary apparatus is simple; (7) double-end or multiple-unit control is simple; (8) the power plant may be located in the most advantageous position; (9) every engine has one or more critical speeds which may be avoided by use of electrical transmission.

The motive power units submitted in this section are all of the conventional Diesel-Electric type of locomotives, and are applicable to service having to do with the heavier tonnage requirements of this study; namely, 500 tons gross trailing load.

Proposals for these units are summarized in analysis 81.3. Submissions by manufacturers follow:

Baldwin Locomotive Works

Specifications covering 300, 400, 600 and 800-h.p. Diesel-Electric locomotives.

Electro-Motive Corporation

One 1,800-h.p. Diesel-Electric locomotive hauling 500 gross tons at 60 m.p.h. on a straight level track.

Ingersoll-Rand Company

Two Diesel-Electric locomotives and power cars of 600 and 800-h.p. capacities.

Westinghouse Electric and Manufacturing Company

Diesel-Electric power car (listed under power cars).

Mid-West Locomotive Works

65-ton Diesel-Electric locomotive.

Utility of Diesel-Electric Locomotives

The motive power units submitted in this section are all of the conventional Diesel-Electric type of locomotives, and are applicable to service having to do with the heavier tonnage requirements of this study; namely, 500 tons gross trailing load.

The fact that Diesel-Electric locomotives are just being developed for road service has considerable to do with the designs submitted since they are the result of experience with switching and transfer service. Thus, the weights are high and, perhaps, the costs, which vary from 250 to 328 pounds per horsepower, and from 31 cents to 50 cents per pound, respectively.

Gross weights vary, for the Container type of Diesel-Electric Power Car, on the average of 120,000 pounds, carrying an average payload of 50 net tons, and trailing an average of 130 tons gross. The cost of these units in quantity averages $50,000.

The straight Diesel-Electric locomotives covered herein vary in weight from 150,000 to 230,000 pounds, and cost from $75,000 to $110,000 for an average of 480 to 800-h.p., respectively.

Cost Data - Diesel-Electric Power Units

Locomotive Type

(Double-Truck)

Cost	Weight	B.H.P.	Cost Per Pound	Cost Per B.H.P.	Weight Per B.H.P.
$ 75,000	150,000	480	$.50	$151.00	313
100,000	200,000	600	.50	167.00	333
85,000	230,000	800	.37	106.00	288
110,000	200,000	800	.55	130.00	250

Diesel-Mechanical. The transmission problem centers around the provision of a suitable mechanism to nullify the inherent disadvantages of an inflexible prime mover.

Power developed by any engine or motor is in proportion to the product of its torque and revolutions per minute. An engine to be applicable to railway service must have speed and torque characteristics, variable between wide limits. Engines having most nearly the desired characteristics are said to be flexible, but although modern internal combustion engines are frequently praised for their flexibility, the only form of prime mover really flexible enough for direct application to railway service is the reciprocating steam engine.

Steam turbines and internal combustion engines all require the addition of gears or other connecting link for multiplying torque at the expense of speed; and vice versa, the ratio of multiplication being variable to meet the different operation conditions encountered.

The transmission of power from the internal combustion engine to the wheels of a railcar or locomotive has always been difficult of accomplishment. However, European railway manufacturers, engineers and operating administrations, during the last ten years, have been giving very serious and practical consideration to this problem, resulting in some valuable developments.

Since this system of power transmission must be a true energy converter, it is found in two general forms; namely, using gears throughout, (constant or sliding mesh), or the hydraulic or fluid flywheel type.

The mechanical drive has the advantage of being of lower cost, lighter and more efficient; electric transmission builders stress remote power, the reliability of their equipment over a long period; and the hydraulic gear manufacturers, the very high efficiency of their transmission when operating on direct drive.

As used on railcars or locomotives, mechanical drive includes, after the engine, the following parts: Clutch, gearbox, reverse gear and axle drive. In turn, these parts are connected by shafts, universal joints and rarely with chains.

Mechanical transmissions for heavy duty, using over 285 b.h.p., have not been very successful in America. Attempts are being made to secure a satisfactory mechanical transmission, with performance equal to that of electrical transmission, and at lower capital and maintenance cost.

Commercially, the hydraulic transmission thus far tried out in this country has not been generally successful, except for a few isolated cases, but notably in the case of the "Autotram".

However, Europe seems to present a different picture, as France has used mechanical transmission from the start, and seems generally committed. Hydraulic transmissions handling up to 410 b.h.p. are a reality in Europe. A prominent French railcar manufacturer advises that before the end of 1935 the French State Railways will have in operation direct mechanically driven Diesel equipment up to 500 b.h.p. capacity, using two such power plants per three-car train.

The high degree of economy of operation attained with Diesel traction in Europe is in no small way due to the successful development of properly designed Diesel engines coupled to all-mechanical transmissions. The fear, often expressed, that this high degree of economy of railcars may become problematic, owing to the high cost of their maintenance, has been completely dispelled by the experience of European railways with Diesel-Mechanical railcars. The carefully designed engines and mechanical transmissions as used are conducive to low maintenance - as many railcars are operating approximately 40,000 miles per year without a single breakdown, and mechanical transmissions perform approximately 250,000 miles per breakdown.

On the basis of past performance, railcars running on branch lines at an average speed of 25 miles per hour, the engine life is calculated at 310,000 miles, while the mechanical power transmission is estimated to correspond to at least 625,000 miles.

After the performance (on some lines) of approximately 86,000 miles in the case of local cars, or in the case of main-line "rapid" cars 125,000 miles, or after approximately two years of service a general repair is made. Experience shows that railcars usually are out of service only 8 percent of the total service time for overhauls and repairs, thus giving them an availability of 92 percent, as against modern steam locomotives showing at least 20 percent of the total service time out for repairs, so that a substantially higher percentage of standby units or capital investment must be provided for them as compared to railcars for the same service.

Total operating expenses of Diesel-Mechanical railcars have been found to be so low, that the saving obtainable by the introduction of railcar or motor train service as compared to the operation of steam trains, or other means of traction, enable the first cost of this equipment to be amortized very rapidly. Due to this saving, it enables the cost of the mechanical equipment of the car to be amortized within one year and a half, and the cost of the whole car to be repaid within approximately three years. No other type of railway rolling stock offers such rapid amortization.

Some of the outstanding European mechanical drives have the following characteristics:

All-Mechanical Type

Renault (French) - Transmission gear and engine are in one unit, which is easily removed for repairs. (French State Railway)

Maybach (German) - Each train of gears is fitted with its own clutch. (German State Railway)

Winterthur (Swiss) - Each train of gears acts as a separate clutch with the main clutch surpressed. (Federal Railway)

Ganz (Hungarian) - Gears always in mesh and operated pneumatically. (Hungarian State Railways)

Fiat (Italian) - Gears in constant mesh with pneumatically operated "dogs". (Italian State Railways)

Wilson (English) - Epicyclic gears, electro-pneumatically or mechanically controlled. (Great Western Railway)

Cotal (French) - This transmission consists of a multiple clutch of the dry plate type, cardan shaft, reverse gear, gearbox, speed reduction gear, chain drive to the driving axle. Bevel wheel type reverse gear is electro-magnetically operated.

Hydraulic Type

Vulcan Sinclair (English) under which Voith-Sinclair (German) operates, consists of a fluid or hydraulic cork converter and a hydraulic coupler to the transmission inner axle. Used extensively by the London General Omnibus, Ltd., and Great Western Railway of England.

Lysholm-Smith (French and Swedish) used by Leland Motors, Ltd., (England) for its railcars by the London Midland & Scottish Railway, consisting of a centrifugal pump rotor, secured to a sleeve carrying a clutch plate, which functions with a hydraulic turbine rotor connected to a secondary shaft through a "free wheel".

Austro-Daimler - Hydraulic clutch, consisting of two plates, each with 24 radio turbine vanes; in turn the drive shaft is connected with the transmission. (Austrian Federal Railways)

Vickers-Coats - (English) - Hydraulic torque converter consisting of simple vane engine-driven impeller, which in turn drives through the kinetic energy of the fluid, and a vaned impulse receiving unit geared to the rail axle or driving wheels.

Proposals are summarized in analysis 81.3. Submissions by manufacturers follow:

Automatic Gear Corporation

1. Self-contained conversion power truck, with pancake engine and all-mechanical transmission mounted under truck bolster. Diesel engine capacity 150-h.p. to 600-h.p. per power truck.

2. 60-ton, 400-h.p., steeple type locomotive equipped with two 200-h.p. pancake ignition type Diesel engines, two automatic gear clutches driving both axles in each truck applying power to eight 30-inch drivers.

3. 80-ton, 600-h.p., tandem type locomotive equipped with two 300-h.p. pancake engines and automatic gears and clutches. Locomotives of this type can be operated in "multiple".

Besler Systems

280-h.p. Power Car (listed under Container Power Cars).

Baldwin Locomotive Works

Two 30-ton Diesel-Mechanical locomotives, 220-h.p., of the 0-4-0 and 0-6-0 types for light-weight branch-line freight service and incidental switching. Also, two similar units using gasoline instead of Diesel fuel.

Clark Equipment Company

1. 35-ton locomotive equipped with two 285-h.p., ignition injection, Diesel engines and turbo-hydraulic drive.

2. 40-ton locomotive equipped with four 160-h.p., 4-cycle, Diesel engines and turbo-hydraulic drive.

3. 55-ton locomotive equipped with four 285-h.p., 16-cylinder, 4-cycle, injection ignition Diesel engines and turbo-hydraulic drive.

4. 77-ton locomotive equipped with four 400-h.p., 6-cylinder, opposed piston, 2-cycle, Diesel engines and turbo-hydraulic drive.

5. Conversion Equipment - 45-ton baggage and express cars - to be equipped with two 285-h.p. ignition injection Diesel engines and turbo-hydraulic drive. Capacity - with 12-tons gross load on car - trailing capacity at 45 m.p.h. 150 tons; at 60 m.p.h. 130 tons.

Stout Railplane Drive

Diesel-Mechanical drive with two 160-h.p., 2,200 r.p.m., Diesel engines, and all-mechanical transmission.

Sun Shipbuilding and Dry Dock Company

One 500-600-h.p. Diesel-Mechanical compressed-air locomotive, powered with four cylinder, vertical, two-cycle, Junkers type Diesel engine. Built as a unit with the engine is a two-stage air compressor. The engine is also connected to the transmission by a clutch. A modification of this design was also submitted for rail car operation. In addition to the compressed-air power units, a straight Diesel power type of transmission was submitted for locomotives and power cars.

Vulcan Iron Works

35-ton, 4-wheel, 250-h.p., Diesel-Mechanical locomotive tractor.

Utility of Diesel-Mechanical Power Units

Use of a self-contained power truck complete with engine and transmission all in one truck as a motive power unit, made possible by use of an all-mechanical automatic gear transmission, greatly simplifies the transmission problem. Here there is not only complete transmission equipment, but a flat ignition type Diesel engine all under the truck bolster. Engines ranging from 150 to 600-h.p. capacity can be built into such a power unit.

With a double-truck unit, it is possible to secure a maximum of 1,200-h.p., and with a locomotive operating in "multiple", which can be arranged, a maximum of 2,400-h.p. would be available under the control of one engineer.

Such a unit power plant permits complete replacing of an entire power truck with engine transmission and reverse gear within a few hours, without tying up expensive motive power and other equipment for days.

Cost Data - Small Diesel-Mechanical Units

Locomotive Type (Double-Truck)

Cost	Weight	B.H.P.	Cost Per Pound	Cost Per B.H.P.	Weight Per B.H.P.
$38,000	120,000	400	$0.317	$ 95.00	300
65,000	160,000	600	0.405	108.00	266
97,000	154,000	(Hyd)1600	0.630	60.75	96

82. Modernization

XXIV TRANSPORT VEHICLES

82. Present Transport Vehicles

Railway

The box car which best serves as the basis for comparison of recently designed cars is the A.R.A. (or A.A.R.) standard, steel-sheathed, wood-lined box car, having inside dimensions as follows: Length 40 feet 6 inches; width 8 feet 9 inches; height 9 feet 4 inches. The car has a volume capacity of 3,311 cubic feet, light weight of 43,350 pounds when equipped with a pair of 5 1/2 inch by 10 inch journal trucks weighing 15,600 pounds and a load limit capacity of 125,650 pounds. The car is designed to provide adequate strength and dependability for general interchange service under present day operating conditions, and is the largest box car which may be moved freely in general interchange service without operating restrictions of consequence. The car weighs 1 1/2 to 2 tons less than representative box cars of substantially the same weight and volume capacity built just prior to the adoption of this standard design. The A.A.R. is also developing standard specifications for 50-ton and 70-ton hopper cars, but so far standard designs for these cars have not been adopted.

The Pennsylvania Railroad has recently built 500 automobile box cars of steel-sheathed, wood-lined construction, equipped with mechanical loading devices, which make possible the convenient handling and hauling of four automobiles per car, and eliminates all bracing or wooden decking in motor-car shipments. The car has inside dimensions as follows: Length 40 feet 6 inches; width 9 feet 2 inches; height 10 feet. The car has a nominal capacity of 100,000 pounds, light weight of 53,600 pounds including auto loaders, and a load limit capacity of 115,400 pounds.

A new type flat car, of which 1,500 have been built by the Pennsylvania Railroad, the General Steel Castings Corporation collaborating on the design, have a height from top of rail to top of floor of only 3 feet 5 1/8 inches. The car has a length of 50 feet over striking castings, and a width over flooring of 9 feet 3 inches. Stake pockets have been provided and located so that reauirements for pockets for flat cars, as well as for container cars, have been satisfied. The underframe is a one piece steel casting, incorporating center sills, side sills, cross members, draft castings, etc., the weight of the casting being approximately 25,500 pounds. The total weight of the car is 50,800 pounds. It is equipped with 6 inch by 11 inch axles and has a load limit capacity of 159,200 pounds.

The American Car and Foundry Company has designed a line of all-steel roofed hopper cars of 50 and 70 tons capacity for handling shipments of cement, flour, lamp black and other bulk materials. The car roof is equipped with eight hinged hatch covers, flanged downward to prevent entrance of water, and the two hopper compartments are each equipped with two discharge gates. The car can thus be loaded and unloaded easily and quickly. Inside surfaces of the hopper compartments are smooth and the car is self-clearing. The 70-ton car has an inside length of 29 feet 3 inches; inside width of 9 feet 5 1/2 inches; height from rail to top of running board 12 feet 10 5/8 inches; length over strikers 35 feet 1 3/4 inches; volume capacity of 2,050 cubic feet, light weight of 53,100 pounds; and load limit of 156,900 pounds.

A three-compartment hopper car, which demonstrates the possibilities of reducing tare weight, has recently been built by the Pressed Steel Car Company. Alloy steels were used in the truck side frames, bolsters and other castings and U.S.S. Cor-Ten steel was used practically throughout in the rolled sections and plate. The car, equipped with four-wheel trucks having 5 1/2 inch by 10 inch axles, has a light weight of 30,000 pounds, a load limit of 139,000 pounds and volume capacity level full of 2,328 cubic feet. The car body has inside dimensions 34 feet 10 inches long and 10 feet 5 inches wide. Top of car body is 10 feet 8 inches above the rail. The car trucks were carefully designed to eliminate weight, so that approximately 3,500 pounds saving per car was effected, the two trucks weighing 12,200 pounds. The axles were hollow-bored 3 1/2 inches in diameter with a reduction in weight of 920 pounds per car. The use of rolled steel wheels effected a reduction of 1,600 pounds per car compared with cast iron wheels.

Early in 1932 the Alcoa Ore Company, subsidiary of the Aluminum Company of America, placed ten 70-ton hopper cars with aluminum bodies in service transporting bauxite. About the same time an identical car was placed in service hauling sulphur. After some 116 trips, traveling a distance of 2,540 miles, the inside face of the sheets which had been in contact with the sulphur remained bright and shiny. As a further experiment, three hoppers built of the same aluminum alloy were filled with coal bought especially for its high sulphur content. After two years no noticeable depreciation in the aluminum was found. Each of the aluminum hopper cars was built as follows: Inside length 39 feet 11 7/8 inches; inside width 9 feet 6 inches; height from rail to top of body, 10 feet 6 inches; length over striking castings 41 feet 11 inches;

Self-Clearing Hopper Car with Covered Top (for Cement)
The Baltimore and Ohio Railroad Company

Aluminum Hopper Car, Weighs 27,700 Pounds,
70.6 ton Load Limit. Baltimore & Ohio Railroad Co.

Hopper Car of Alloy Steel, weighs 30,000 Pounds,
69.5 ton Load Limit. Pressed Steel Car Company

volume capacity level full 2,475 cubic feet; light weight 38,900 pounds; load limit 171,100 pounds on 6 inch by 11 inch axles. Similar hopper cars of steel construction, having the same volume capacity and nominal weight capacity, weigh 10,000 to 20,000 pounds more than the aluminum cars. Approximately 12,500 pounds of aluminum plates, shapes and castings were used, but standard construction methods and materials were employed for the trucks, brake equipment, safety devices, draft gears, couplers, center plates, door mechanism and rivets.

An all aluminum hopper car was built by the Baltimore and Ohio Railroad Company early in 1934. Standard 50-ton trucks with 5 1/2 inch by 10 inch journals support the car, while the bolsters, spring planks and brake levers are of aluminum. The center sill is of fishbelly girder construction, built of aluminum plates and angles. The side stakes, side sills, corner posts and top chords, as well as the side, slope and end sheets are of aluminum alloys. The car has an inside length of 35 feet; inside width 10 feet 2 inches; height from rail to top of body 10 feet 8 inches; volume capacity level full 2,450 cubic feet; light weight 27,700 pounds; load limit 141,300 pounds. Thus, while the car is nominally known as a 55-ton car, it has a capacity of 70 tons and permits the maximum load limit to be hauled in coal through the use of end hoppers with end doors. In building the hopper car 10,175 pounds of aluminum were used - 9,196 pounds in the body and 979 pounds in the trucks. A steel car of corresponding dimensions without the end hoppers has a light weight of about 44,000 pounds, and load limit of 125,000 pounds.

The Baltimore and Ohio Railroad has recently built five other light-weight hopper cars, each of 100,000 pounds nominal capacity. One car has body and underframe of Cor-Ten steel, the body being arranged with center and end hoppers. This car has a volume capacity level full of 2,394 cubic feet, light weight of 32,000 pounds and load limit of 137,000 pounds. Another hopper car with body and underframe of Cor-Ten steel has two self-clearing hoppers, compartments and no end hoppers. This car has a volume capacity level full of 2,070 cubic feet, light weight of 31,200 pounds and load limit of 137,800 pounds. A third car has an underframe of Cor-Ten steel with body of Plykrome steel, and is of the same design as the car just described, having capacity of 2,070 cubic feet, light weight of 33,100 pounds and load limit of 135,900 pounds. The fourth car of the same design has Cor-Ten steel underframe and body of rustless iron, capacity 2,070 cubic feet, light weight 32,900 pounds, load limit 136,100 pounds. The fifth car is of the same design, but with underframe of Man-Ten steel and body of Republic double-strength steel. The capacity is 2,070 cubic feet, light weight 33,000 pounds, load limit 136,000 pounds. All five of the cars have articulated lateral motion trucks with 5 1/2 inch by 10 inch journals; antifriction self-centering side bearings; bolster spring stabilizers; cushion underframe; high-powered hand brake; A-B air brake; and safety stay lock couplers.

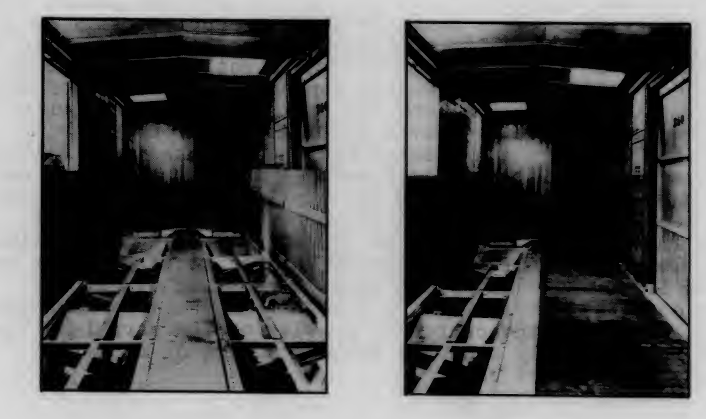
The last four hopper cars described are equipped with brake slack adjusters and Bell Crank truck levers. These five hopper cars have a ratio of pay load to tare of better than four to one and haul loads which ordinarily require 6 inch by 11 inch axles on 5 1/2 inch by 10 inch axles without overloading them.

The Baltimore and Ohio Railroad has just completed building a light-weight covered hopper car designed for carrying cement. This car built with two hopper compartments has eight water-tight hinged roof hatches, and is equipped with self-clearing hopper discharge gates. The underframe is of Man-Ten steel and the body of Alan Wood 70-90 steel. The car has a volume capacity of 1,740 cubic feet, light weight of 35,000 pounds and load limit of 134,000 pounds. The car has the same special equipment as the four hopper cars described in the preceding paragraph.

In the field of improved box car design and construction, the Baltimore and Ohio Railroad has also made a distinct contribution by recently building six new type box cars, three each of 80,000 and 100,000 pounds nominal capacity. One of the 80,000 pound nominal capacity box cars has inside dimensions as follows: Length 40 feet 6 inches; width 8 feet 9 inches; height 9 feet 6 inches; with volume capacity of 3,390 cubic feet; light weight 37,500 pounds; and load limit 98,500 pounds. This car has both body and underframe of Cor-Ten steel and is carried on 5 inch by 9 inch journals. The other two box cars on 5 inch by 9 inch journals have "covered wagon" type bodies. One car has Cor-Ten steel underframe and copper-bearing, steel-sheathed, wood-lined body. This car has an inside length of 40 feet 6 inches; inside width of 8 feet 9 inches; and inside height of 9 feet 2 inches; with volume capacity of 3,248 cubic feet; light weight of 38,400 pounds; and load limit of 97,600 pounds. The covered wagon body has integral side and roof sheets with curved construction at the junction of the roof and sides, resulting in greater strength, lower construction cost and increased cubical content. The covered wagon cars are equipped with water-tight hinged roof hatches, and hinged wooden floors below which are automatic self-locking hopper doors, thereby providing for quick and economical loading and unloading of bulk materials. The third 80,000 pound nominal capacity box car has underframe of Man-Ten steel, and is sheathed with Cor-Ten steel with Masonite lining. It has inside dimensions as follows: Length 40 feet 7 inches; width 8 feet 10 inches; height 9 feet 1 inch. The volume capacity is 3,282 cubic feet; light weight 34,000 pounds; and load limit 102,000 pounds. The car has the covered wagon type body just described.

The three 100,000 pound nominal capacity box cars built by the Baltimore and Ohio Railroad are of the covered wagon type, and each is carried on 5 1/2 inch by 10 inch journals. One car was converted from an 80,000 pound nominal capacity car, requiring a new body, to a steel-sheathed, wood-lined covered wagon type car with an increase in volume capacity from 2,798 cubic feet to 3,334 cubic feet. This car now has inside dimensions as follows: Length 40 feet 3 inches; width 9 feet; height 9 feet 2 inches. The tare weight of the car is 42,700 pounds, and the load limit 126,300 pounds. The other two box cars have steel-sheathed wood-lined bodies and are practically identical in size and construction, both having center sills of Man-Ten steel and hoppers of Cor-Ten steel. However, one car has center hopper bottoms which discharge inside of tracks, while the other has center hopper bottoms which discharge outside of tracks. Both cars have a volume capacity of 3,264 cubic feet and inside dimensions as follows: Length 40 feet 3 inches; width 9 feet; height 9 feet. One car weighs 46,900 pounds and the other weighs 46,700 pounds, with corresponding load limits of 122,100 pounds and 122,300 pounds. All six box cars are equipped with articulated lateral motion trucks; antifriction, self-centering side bearings; bolster spring stabilizers; brake slack adjusters; high-powered hand brakes; A-B air brake; and metal running boards. The reconstructed box car is equipped with high-capacity friction draft gear, and the other five cars have a cushion underframe and safety stay lock couplers. The five new cars are equipped with Bell Crank truck levers, and have side door rear edge locks and ball-bearing rollers. This brief description indicates the improvements which have been made in designing cars to more nearly meet commercial requirements, reduction of tare weight without reduction of load-carrying ability, and use of new or improved car equipment to assist in car dependability and performance.

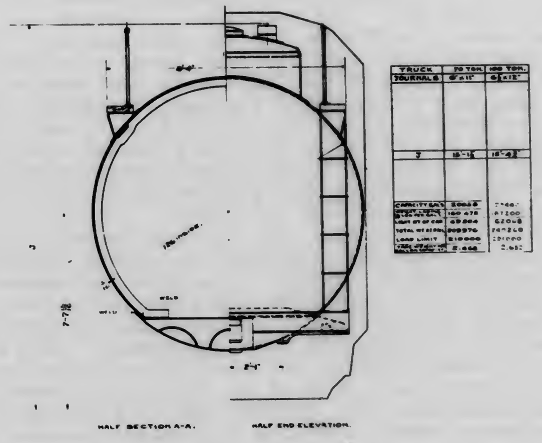
Covered Wagon Type Box Car for Bulk & Packaged Freight
Baltimore and Ohio Railroad Company



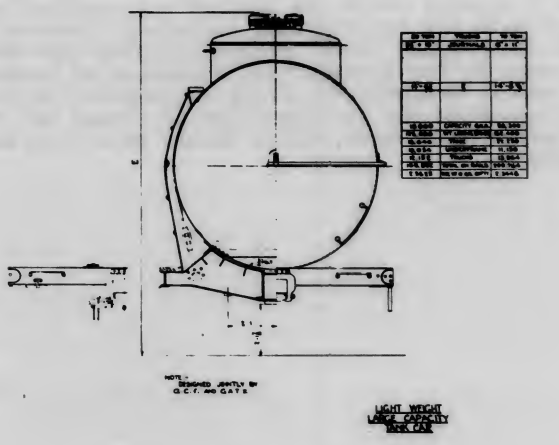
Interior of Covered Wagon Type Box Car Showing
Roof Hatches, Hinged Floors, and Discharge Hoppers

For refrigerated products the North American Car Corporation has developed a small all-steel, ice-refrigerated car which closely follows European practice in car construction, but is designed to operate in any American freight train. The car is mounted on two wheel trucks with 5 inch by 9 inch journals, equipped with double-coil springs and friction-truck springs to promote easy riding. Inside dimensions of the car are as follows: Length between bulkheads 15 feet 8 inches; length between end linings 19 feet 10 inches; width 8 feet 4 inches; height, top of floor rack to beef rails, 6 feet 2 1/2 inches; height, floor to ceiling, 7 feet 2 5/8 inches. The car has a volume capacity of 770 cubic feet, light weight 23,000 pounds and nominal capacity of 20,000 pounds. The length over striking castings is 22 feet 1 inch; wheel base 13 feet 6 inches; and overall height from top of rail 13 feet 11 inches. The car has 5 inches or more of effective insulation on sides, ends, floor and roof, Dry Zero being used with inside car lining of Masonite. The car has performed well in actual service and represents one answer to the demand for smaller shipping units. The ratio of payload to tare is less than one to one.

Designs for a large capacity petroleum tank car have been developed by the American Car and Foundry Company, General American Transportation Company, General Steel Castings Corporation and O. C. Duryea Corporation. It was found that using standard four-wheel trucks with 6 1/2 inch by 12 inch journals and a maximum allowable load on rails of 251,000 pounds that the tare weight of the tank car will be approximately 30 tons, with a carrying capacity of 24,000 gallons and load limit of practically 95 tons. Such a car has a ratio of payload to tare of 3 1/6 to 1. The design contemplates the use of high-tensile alloy steel for both the tank and underframe with light-weight selective travel draft gear, air brakes with empty and load brake mechanism and clasp brakes, and either cast steel or built-up underframe. A similar car to be carried on 70-ton trucks with 6 inch by 11 inch journals, rail load limit of 210,000 pounds would have a tare weight of about 23 1/2 tons, capacity of 20,000 gallons and load limit of at least 80 tons, the ratio of payload to tare weight being 3.4 to 1. These cars have overall dimensions within the clearance lines prescribed by the American Railway Engineering Association, and the center of gravity of the cars is slightly below the generally accepted maximum height of center of gravity for freight cars.



Design of Large Capacity Tank Car
General Steel Castings Corporation.



Design of Large Capacity Tank Car
American Car and Foundry Company.

The General Steel Castings Corporation has designed but not built a car for container service, three different types of frame being suggested. One embodies a floating deck and cast-steel underframe, similar to the car designed by W.P. Kellett; another calls for cushioned floating center construction and cast-steel underframe, embodying the Duryea type of car; while the third suggests a cushioned floating container group and cast-steel underframe. For the first type of car, the containers carried on casters are rigidly locked against movement and the deck is supported by and moved longitudinally on the underframe, which movement is resisted by friction plates and springs located between deck and frame. Friction draft gears receive the initial shocks. For the car embodying the Duryea floating center, containers mounted on either casters or skids may be locked to the car frame. The floating center member travels longitudinally with the car frame, resisted by cushion springs located on the coupler center line and interposed between the body bolster and floating member. The container car with cushioned floating container group embodies laterally transferable containers mounted on skids which rest on the car floor. The containers are interlocked by keys and are locked together between shock absorbing mechanisms located at both ends of the container group. Friction draft gears absorb the initial shocks, the shock absorbing mechanism the secondary shocks, sliding friction in combination with them cushioning the rebound. The use and operation of containers in conjunction with any of the three designs of container cars contemplates the use of a highway truck (or tractor and semitrailer) equipped with a mechanism for transferring containers between truck and car. Each truck would carry special wrenches and other equipment necessary to the transfer and anchorage of containers. The container car is designed to afford shock-proof carriage of container lading, with the incorporation of strong but relatively light unitary construction, which should result in low car maintenance expense.

83. Containers

Vehicle

Containers may be classified for transportation purposes either according to the manner in which they are handled, or the products which they will suitably carry. Thus, containers may be (1) lifted, either by an overhead crane or from below by a lift truck; (2) roller, by means of wheels, casters or rollers attached to the container; or (3) skidded, by means of power transmitted through skid-rails forming the base of the container. Various combinations of these three methods of movement have been incorporated in different designs.

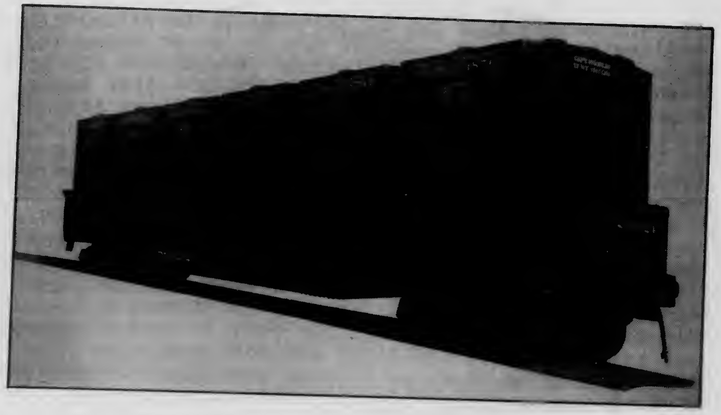
As to use, containers have been designed for ordinary freight and merchandise; bulk material requiring protection from the elements (as lime and cement); bulk material not requiring protection (as brick and crushed stone); liquid material (as milk and petroleum products); furniture and household goods; live animals; and perishables.

For movement by rail, containers may be carried on ordinary flat cars slightly modified, specially designed flat cars, special drop-frame or well cars, regular gondola cars, drop-side gondolas, or in box or express cars. By highway, containers may be carried on trucks, trailers or semitrailers, in some cases the vehicle being standard automotive equipment with slight modifications, while other designs involve special highway vehicles.

Containers vary greatly in size, the largest being over 20 feet long with volume capacity of 1,050 cubic feet and weighing some 6,000 pounds, while the smallest container carried on (not in) a car is but 4 feet 3 inches long with volume capacity of 110 cubic feet and weighing slightly more than 1,100 pounds.

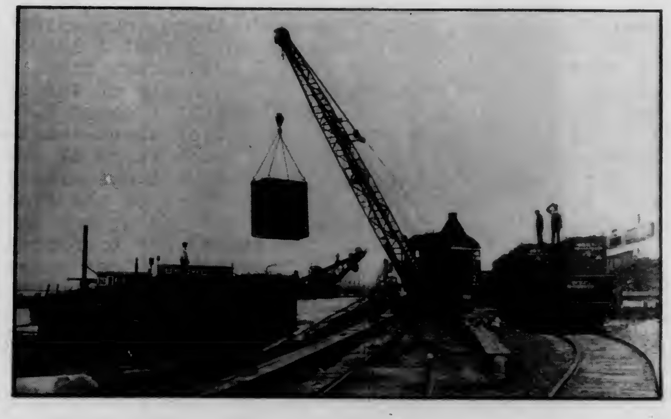
The principal characteristics which distinguish the different types of containers that have been built for coordinated service are shown in analysis 83.1, which with the description which follows will give some idea of the range of equipment now available. A number of containers involving modifications of existing equipment, but which are still in the blueprint or miniature model stage, are not included in analysis 83.1 but are described herein.

Containers in Commercial Use. In actual practice containers are in regular use by only a few railroads. The New York Central Railroad and the L.C.L. Corporation, considered as a unit, own the greatest number of containers - there being over 3,900 merchandise containers and more than 8,500 bulk material containers. Some 2,300 of the merchandise containers are mounted on legs to permit handling by industrial lift trucks.



Merchandise Containers on Special Railroad Car.
The L.C.L. Corporation (New York Central Lines).

The L.C.L. Corporation Merchandise Containers
Being Transferred from Car to Platform



The L.C.L. Corporation Bulk Material Containers
Being Transferred from Car to Barge

The L.C.L. Corporation
Refrigerator Container

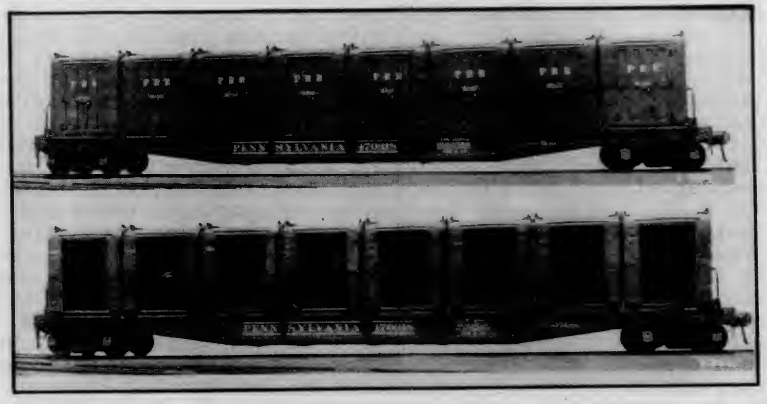
These containers have overall dimensions as follows: Length 9 feet 3 3/8 inches; width 7 feet 2 1/2 inches; height 9 feet 4 1/16 inches; with volume capacity of 417 cubic feet; weight capacity of 10,000 pounds; and light weight of 2,967 pounds. The remainder of the merchandise containers, numbering almost 1,600, are of flat bottom construction; 9 feet 3 1/2 inches long; 7 feet 1/2 inch wide; 8 feet 1 3/4 inches high, overall dimensions. These containers have a capacity of 426 cubic feet and 10,000 pounds, with light weight of about 3,000 pounds. All merchandise containers are of steel-sheathed, wood-lined construction, are equipped with rings at the top corners for crane handling, and are loaded transversely on specially equipped gondola cars. The leg-type and flat-bottom containers have two single hinged doors, one in each end. The leg-type merchandise containers are transported in drop-side gondolas. At station platforms the car sides, when dropped, form an apron which bridges the space between car and platform over which lift trucks operate. Flat bottom containers move in low (stationary) side gondolas, the containers being handled in and out of cars by crane.

The bulk material containers of the New York Central Railroad consist of some 6,000 all-steel drop-bottom containers, each with water-tight roof hatch designed for transporting cement, lime and similar products, and over 2,500 all steel containers used principally in transporting brick. Both types of bulk material containers have a volume capacity of 209 cubic feet; weight capacity of 11,000 pounds; and outside dimensions as follows: Length 7 feet 2 1/2 inches; width 4 feet 8 3/4 inches; height 8 feet 2 1/8 inches. The brick containers each weigh 3,000 pounds, while the other bulk material containers weigh 2,300 pounds apiece. The containers are handled in and out of cars by crane, and are loaded 12 to a gondola car. Of the bulk material containers, those carrying brick move largely between Hudson River brick yards and the metropolitan New York area, while the cement and lime containers have been used mostly in connection with road building projects.

A comparatively small number of L.C.L. Corporation merchandise containers are leased to three railroads other than the New York Central. The remainder, many of which are used by the Universal Carloading and Distributing Company, move over the New York Central Lines with regular container service between many large cities, such as New York, Boston, Syracuse, Rochester, Buffalo, Cleveland, Chicago, Detroit and others. At all principal points lift truck and crane equipment are available to effect the transfer of containers between cars, platforms and highway vehicles.

The Pennsylvania Railroad operates flat bottom containers for merchandise and for bulk materials, all containers being handled by cranes. Containers are transported on flat cars

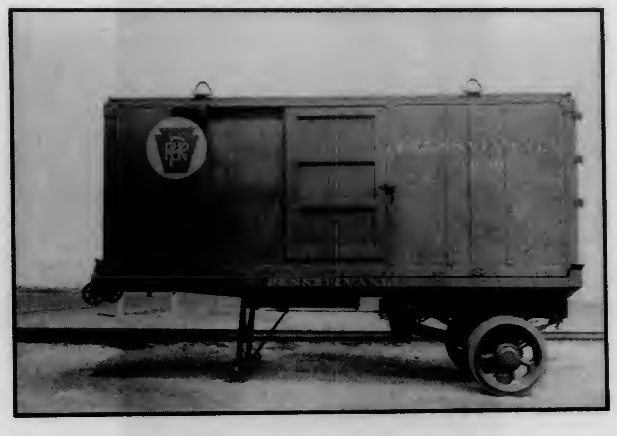
Weathertight Bulk Material Container
Pennsylvania Railroad Co.



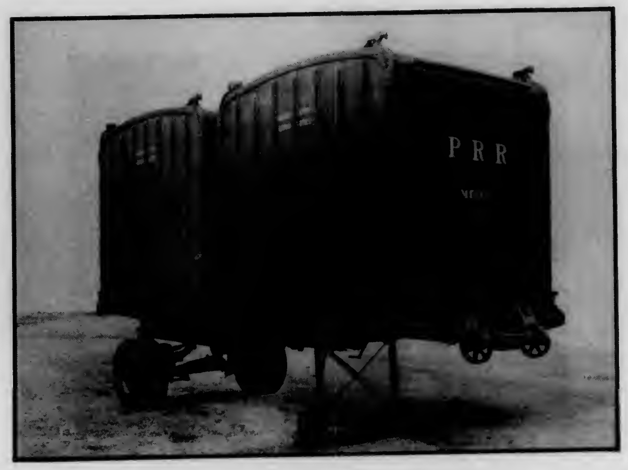
Pennsylvania Railroad Co. Containers
Mounted on 70-ton capacity Flat Car

equipped with special castings which take the place of stake pockets and afford anchorage for the containers so that no auxiliary fastenings are required. A feature of the Pennsylvania operation is the container transfer yard at Enola (Harrisburg), Pennsylvania, and South Kearney, New Jersey. In actual operation, a carload of containers originating at any point may have one container for each of several destinations. At the two transfer yards the containers are sorted, being moved to and from other cars so that a car leaving the transfer has a solid load for destination. The transfer service is performed speedily, the time required to couple on to a container, hoist, transfer and lower in place on another car often requiring less than one minute. No ground men are employed, all work being done by the crane operator. The additional force at the transfer consists of a foreman and yard clerk. Practically all of the traffic handled in the merchandise containers is less than carload freight in station-to-station movement. In most cases the containers at initial and final terminals are not removed from the car, in which case the containers take the place of a compartment car.

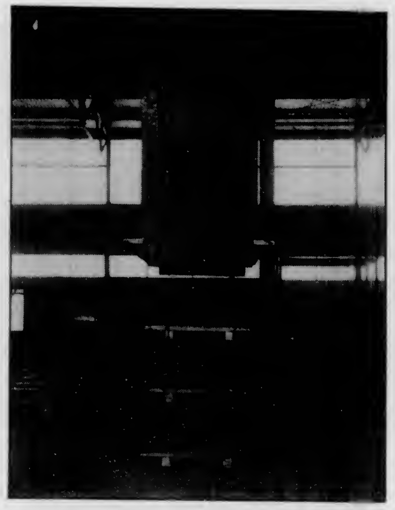
In addition to the more than 4,000 merchandise containers 9 feet long by 7 feet wide by 8 feet high, which the Pennsylvania Railroad operates in regular station-to-station service, in lieu of less than carload freight cars, a so-called demountable truck body service is provided. Under this arrangement any truck body not exceeding 25 feet in length, 8 1/2 feet in width and 9 feet in height, and equipped at the top with lifting links to engage hooks of crane conveyor, may be transported between New York and Richmond, Virginia. To encourage the use of this service, the railroad built 50 truck bodies with dimensions 19 feet by 7 feet by 7 feet 4 inches, each of 790 cubic feet capacity and 30,000 pounds load limit, which patrons can lease. However, little use has been made of the bodies. The service has been used regularly since 1932 for transporting bodies designed and built by the Motor Terminals Company of New York. These bodies are 20 feet by 8 feet by 8 feet; of 1,000 cubic feet capacity and 60,000 pounds load limit; of all-steel construction weighing approximately 6,000 pounds; with large doors on each of four sides; well ventilated, but weather tight; and costing approximately 50 cents per cubic foot of capacity. The flat cars on which the bodies are transported are equipped with special socket anchorages recessed in the car deck and covered with a plate flush with the car floor when bodies are not in position. The bodies have suffered no ill effects in more than two years of railroad service. They are transferred between flat car and semitrailer by overhead crane at origin and destination station, from which point they are moved to shippers' doors by the trucking company. Similar truck body containers designed by Mr. B. F. Fitch, President of Motor Terminals Company, have been successfully operated over the Cincinnati and Lake Erie Railroad.



Pennsylvania Railroad Co. Containers
Mounted on Highway Semi-Trailer.



"Pennsylvania" Demountable Truck Body



Bulk Material Container
for Carrying Brick

Weathertight Bulk Material Container
of Youngstown Steel Door Company

Watertight Folding End Doors of Special Design
Motor Rail Company Container

All Steel, Flat Bottom, Lift Type Container, 20'-0"long.
Motor Rail Company, B.F. Fitch, Designer.

The Pennsylvania Railroad has also built containers for carrying bulk freight of which there are: 108 containers not weatherproof, 7 feet long, 4 feet 3 inches wide, 8 feet 9 inches high, suitable for common brick, gravel, sand, crushed stone, etc.; 204 containers, weatherproof with drop bottoms, 7 feet long, 4 feet 3 inches wide, 6 feet 3 1/2 inches high, suitable for cement and lime. These containers load 12 to a gondola car, 26 such cars being equipped with heavy-duty axles to carry 125 gross tons each. Material is loaded into containers through the top and is discharged through drop-bottom doors, the containers being handled by crane. The cement and lime containers have had steady use, but the other type has been used principally in experimental service. The Youngstown Steel Door Company, which collaborated with the Pennsylvania Railroad in building these containers, has developed a modified container for handling dolomite cement, lime, etc., which requires only a single-line hoist and permits distribution of the contents of one container in any desired quantity. A number of these containers are in regular use between limestone plants and steel mills, being transported by the Nickel Plate Railroad.

Another type of container consisting of a steel jacket, which is slipped over a commodity when stacked on a skid or platform, has been built experimentally by the Pennsylvania Railroad. Such containers are designed for the handling of face brick and similar materials requiring protection from chipping and damage. The containers are 7 feet 6 inches long, 4 feet 3 inches wide and are either 3 feet 6 inches or 7 feet high, with corresponding load limits of 8 and 16 thousand pounds.

The Milwaukee Electric Railway and Light Company operates a well developed coordinated rail-highway service in connection with the collection, transportation and delivery of merchandise freight, gasoline, milk and coal, using demountable truck body containers. To illustrate the operation, freight is picked up in Milwaukee by tractor semitrailers, a container being mounted on each semitrailer; the containers are transferred to railroad cars and transported to the railheads; the containers are there transferred to semitrailers for delivery of contents via highway. The tractors are equipped with winches driven by the truck motor. The containers are of the skid or slide-off type, and are moved on and off the semitrailer by a cable actuated by the winch. The cars, which are end loaded, have channel guides to receive the skid-rails, which form the base of the container. At the Milwaukee terminal there is a fantail of stub tracks with a transfer table runway at right angles to these tracks. In operation the containers are pulled by cable from car or semitrailer onto the transfer table, which is then moved until in line with the channel guides on another car, semitrailer or storage platform. The container is then skidded to the proper vehicle or onto a platform. The

Transferring Skid Container from Car to Semi-Trailer
The Milwaukee Electric Railway & Light Company

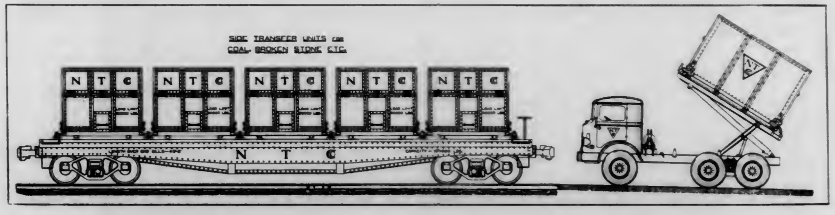
Skid Type Container Mounted on Semi-Trailer transfer table speeds up the operation, one man performing the whole operation of transferring containers between rail and highway vehicles, the average time for complete movement of one container being about ten minutes. At points other than Milwaukee, transfer tables are not used, due to the small volume of daily traffic, the containers being exchanged directly between railroad cars and highway semitrailers.

Several types of containers are used in this operation, there being open top containers 14 feet 2 inches long, 6 feet 8 inches wide, 5 feet 8 inches high; closed containers 14 feet 2 inches long, 6 feet 8 inches wide, 5 feet 11 inches high, each with a three part door at one end; milk tank containers of 1,250 to 1,750 gallons capacity; gasoline containers of 2,000 gallons capacity; and coal and rough material containers, 15 feet 9 inches long, 7 feet wide, 3 feet 11 inches high, mounted on dump trucks, the contents being discharged through a hinged end gate. All of the containers have the same type of skid-rails and underframe, with only the bodies mounted on the understructure differing in construction. This produces a high degree of flexibility in the operations, requiring a minimum number of cars, semitrailers and tractors, with a multiplicity of containers, having bodies designed to carry general freight and special products.

Another system of coordinated rail-highway service, which employs containers mounted on casters instead of on skid-rails, has been developed by Mr. W. P. Kellett, Chief Engineer of Acme Fast Freight, Inc. At present two special flat cars each carrying two large containers have been constructed, one for the Delaware, Lackawanna & Western Railway Company, and one for the Wabash Railway Company, the cars having been in test service over these lines between New York and Chicago for several months during 1934. To effect transfer of containers between rail and highway a tractor and specially designed semitrailer is used. Particular attention has been paid to absorption of shocks incident to rail travel. In test runs, light, fragile and dense freight, which was loaded indiscriminately in containers without blocking or bracing showed no signs of shifting or damage throughout the rail journey. The freight car has a movable deck mounted on the underframe of a practically standard flat car. This deck has a longitudinal spring cushioned movement of 4 1/2 inches either direction from neutral position, the movement being independent of the car underframe. The car is equipped with a draft gear having 4 1/2 inches of travel in buff, which results in a total friction cushioned movement of 9 inches under impact, compared to a movement of 2 3/4 inches in the usual freight car.

The containers are 21 feet 1 1/2 inches long, 7 feet 9 inches wide, 8 feet 5 3/4 inches high, of steel and wood construction, volume capacity 1,050 cubic feet, load limit of

Transferring Acme Fast Freight, Inc. Container
Between Special Flat Car and Highway Unit



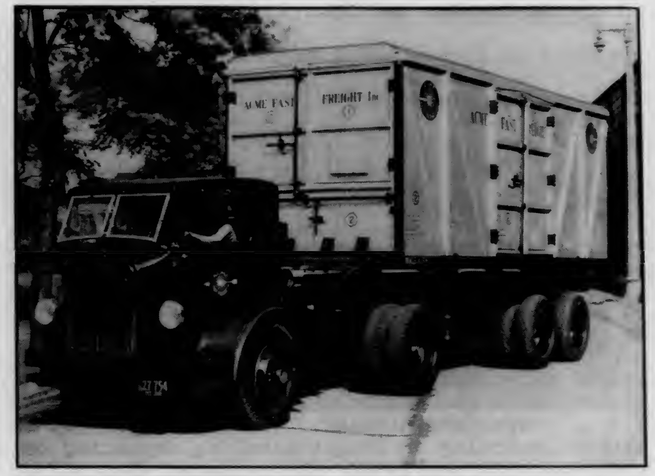
Proposed Rail - Highway Container Equipment
of W. P. Kellett for Movement of Bulk Material

25,000 pounds on the highway and weigh 5,800 pounds each. There is a double-hinged door on each side and a three-part door occupies the whole of each end, thus providing great accessibility. Each container is mounted on eight, double-wheel, ball bearing, swivel casters, and is secured to the freight car by four adjustable stops mounted on the car deck which engage the four corners of the container.

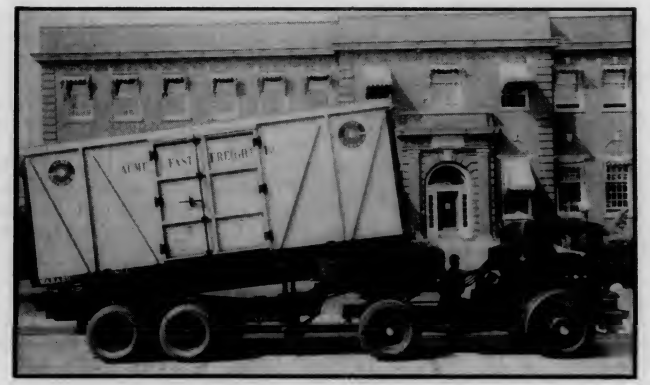
The highway unit consists of a cab-over-engine design tractor, and a special drop-frame, dual-axle, semitrailer equipped with four hydraulic jacks, which elevate and tilt a platform built with guides and stops to engage the casters on the container. The tractor is provided with a power winch, drum, cable and controls mounted behind the cab. End transfer of containers between freight car and semitrailer is advocated, although side transfer with the semitrailer parked parallel and close to the car side sills can be accomplished by means of tackle blocks and special rigging.

In practice the tractor maneuvers the semitrailer into position on a roadway adjacent to the car at a siding with the highway vehicle in line with the rails. No connection is made between the semitrailer and freight car. The moveable platform on semitrailer is elevated, lowered or tilted until it is on the same plane and aligned with the freight car deck. After releasing the container end stops on the car, the cable on the tractor is attached to the container, and it is rolled from the end of the car onto the semitrailer to which it is secured by turnbuckles. To reverse the operation it is necessary to pass the cable under the semitrailer, over the car deck, around a sheave and back to the end of the container at the rear of semitrailer. The considerable amount of manual operation that is necessary to effect transfer of the container between rail and highway vehicles is time consuming.

The Kellett plan calls for other types of bodies to be mounted on the 21 foot 1 1/2 inch roller subframe, and handled by the same rail and highway equipment. These bodies, which have not been built, would be for refrigerated products: Live poultry; live stock; bulk milk; other tank products; tile, sewer pipe, etc., in low side gondola bodies; lumber, structural steel, etc., on open stake bodies. In addition an open top bulk material container mounted on casters, approximately 10 feet long by 8 feet 6 inches wide by 6 feet 6 inches high with 20,000 pound load limit, is proposed. Five of these containers, arranged for side transfer, would be loaded on a 46-foot car. Each container would have a hinged gate extending the full width of each end, with a small vertical sliding door in the center of each gate. The container would be moved by highway on a dual rear axle elevating dump truck, and the container contents discharged by gravity through the end gate or small door.



Container Mounted for Highway Movement
Acme Fast Freight, Inc., W. P. Kellett, Designer

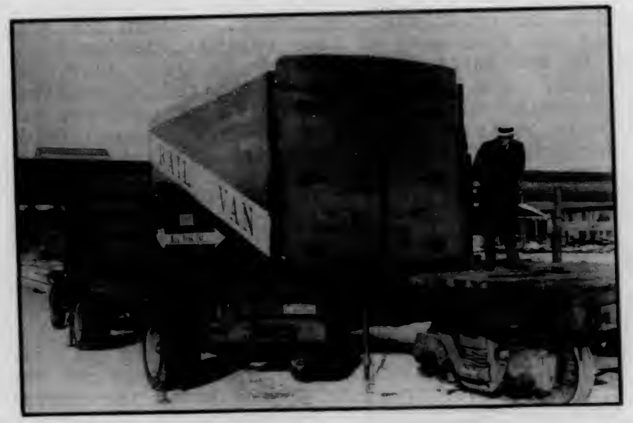


Special Tractor and Semi-Trailer Unit
for Transferring and Hauling Container

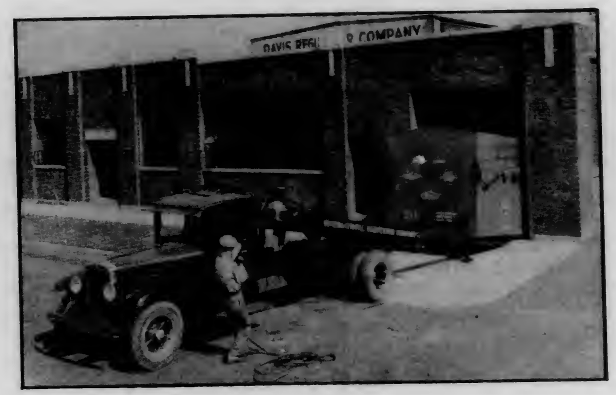
As far as is known, no other types of containers carried on flat or open top railroad cars and on highway trucks or trailers are in regular service in this country.

Containers in Experimental Use. There are several types of containers built for rail-highway service, which have been tested or used experimentally in rail service. One is the container designed by Mr. G. R. Meyercord and built by the Mt. Vernon Car Manufacturing Company. Three sizes of containers have been built, namely: 7 feet 9 inches long by 6 feet wide by 7 feet 11 inches high, 304 cubic feet, light weight 1,760 pounds, load limit 10,000 pounds; 9 feet 6 inches long by 7 feet 9 inches wide by 7 feet 11 inches high, 493 cubic feet, light weight 2,280 pounds, load limit 10,000 pounds; 15 feet 11 1/2 inches long, 7 feet 11 inches wide, 7 feet 11 inches high, 823 cubic feet, light weight 2,935 pounds. All these containers are of steel and special plywood construction with large double doors at each end. Each container is of the flat bottom type and is equipped with four sets of retractable rollers, there being two rollers to a set mounted at right angles. The rollers are raised and lowered by air operated pistons. The containers may thus be moved either laterally or longitudinally, depending on which set of rollers bear the load. The rollers, when raised, fit into recesses in the container frame. The container is secured to an ordinary flat car by special spring clamps and turnbuckle rods fastened to the container sides and car stake pockets. The spring hold-down clamps absorb a considerable amount of impact. To transfer the container to a highway vehicle the International Harvester Company has built a truck with a movable flat deck, which is elevated and tilted by means of the truck motor. Using a capstan and cable mounted on the truck,with extension guide rails and platform supporting jacks, a container can be moved from street level on or off the truck platform. A semitrailer with an elevating tilting platform has also been built for handling this container by the B. & J. Trailer Company. Hand-operated, hydraulic jacks, one at each corner of the trailer platform, make it possible to bring the platform level with the flat car floor, after which the container can be rolled sidewise onto the semitrailer. The complete transfer operation can be accomplished by one man in about 20 minutes.

A modification of the Milwaukee skid container plan has been developed by Mr. B. F. Fitch, and the container tested experimentally by the New York, Ontario & Western Railroad. The container is 10 feet 3 inches long, 8 feet wide and at present 4 feet high with open top, though in production a closed container 8 feet high would be used. The container of all steel construction is mounted on two longitudinal skid-rails, which slide on two recessed channels running the full width of the flat car deck. An ordinary flat car is used, the container being arranged for side transfer loading



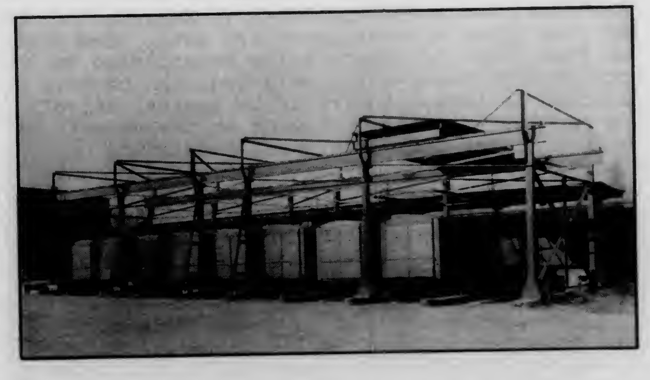
Side Transfer of Container Between
Standard Flat Car and Special Highway Semi-Trailer



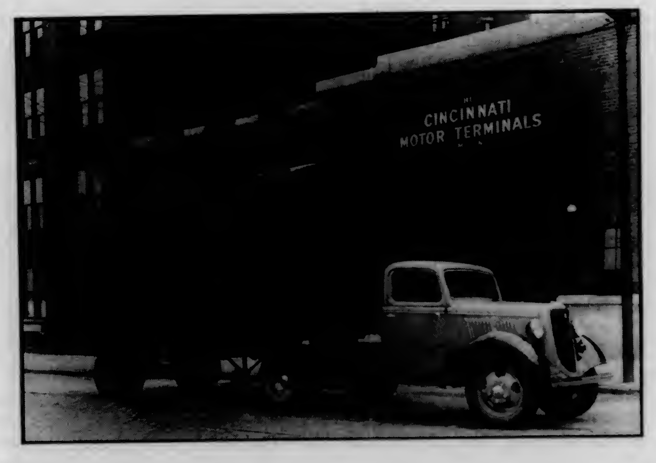
Container Being Unloaded to Street Level by gravity
Mt. Vernon Car Manufacturing Co. Container
International Harvester Co. Truck

five to a 42-foot car or six to a 50-foot car. The container skid rails are locked to the guide channels on the car at four points by retractable wedge lugs, which are operated from either side of the car by a lever and crank. Within the guide channels on the car are four sets of leaf springs, designed to absorb end impacts transmitted beyond the car draft gear. To transfer the container to a highway vehicle a standard semitrailer has been fitted with auxiliary apparatus costing a few hundred dollars. This consists of two longitudinal channel guides riveted to the semitrailer frame, along which pass two endless conveyor chains. At the rear of the semitrailer is a hinged bridge over which the conveyor links pass, and at the front of the semitrailer is a gear and pinion and speed reducer whereby power is transmitted to the chain through a power take-off from the tractor motor. The semitrailer is backed into position at right angles to the flat car with the channel guides on semitrailer and car approximately in line. The hinged bridge is raised and fastened to special anchorages mounted on the car side sills. Connection is made between the conveyor links and end of container at two points. The container is unloaded from car chassis and by the tractor driver speeding up the motor the container is pulled onto the semitrailer. The container is moved onto the car by simply reversing the direction of motion of the chain. Movement of the container from one vehicle to the other takes 35 to 40 seconds, and the complete transfer from the time the tractor semitrailer arrives on the scene can be done by the tractor driver alone in 3 to 5 minutes. Differences in elevation of several inches between semitrailer guide channels and those on the car are readily overcome in making the transfer, the springs on truck and flat car and the hinged bridge on semitrailer all acting in conjunction to assist the skidding. No difficulty in moving the container loaded with 30,000 pounds of material has been experienced. This container built with a closed all metal body, ventilated and weather tight, with a large door on each of four sides and a water tight roof hatch, and equipped with four hooks at top for crane lifting, would weigh approximately 3,500 pounds, if built of ordinary steel and probably less than 2,500 pounds using alloy steels. The Fitch plan embraces containers of various sizes, such as 10, 20 and 24 feet long, all being 8 feet wide and 8 feet high, designed for all general freight, as well as special bodies for milk, other liquids, perishables and livestock. Electrical control and operation of the highway vehicle transfer mechanism is also being developed as an alternative to the mechanical transmission.

The Cincinnati Motor Terminals Company (B.F. Fitch, President) since 1917 has used more than 250 lift-type containers, 17 feet 6 inches long by 8 feet wide by 8 feet high, for intraterminal truck haul of merchandise between all rail carriers freight stations in Cincinnati, 23 heavy-duty truck chassis being employed. The operation has been very successful.



One of the Container Transfer Stations of the Cincinnati Motor Terminals Company



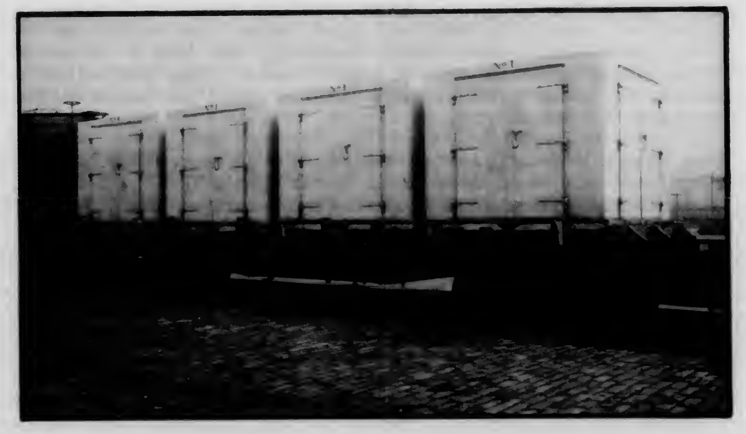
Intra-City Container and Trucking Unit of the Cincinnati Motor Terminals Company

The Perrin-Walsh, (Roloff, Inc.) system is typical of containers mounted on rollers. The system was used in New York and New England by the Boston and Maine Railroad and the New York, New Haven and Hartford Railroad. Both closed and open types of containers are used, some being carried on flat cars and others being transported in box cars. Four or more heavy-duty, swivel-design casters are used, which can be locked individually against swivelling. The system requires special equipment on the chassis of motor trucks to carry the containers, consisting of tracks and locking devices, which may be attached to standard highway vehicles. Tracks and locking devices are also used on flat cars, arranged to accommodate any size container. The containers are also equipped with lifting rings for handling by crane.

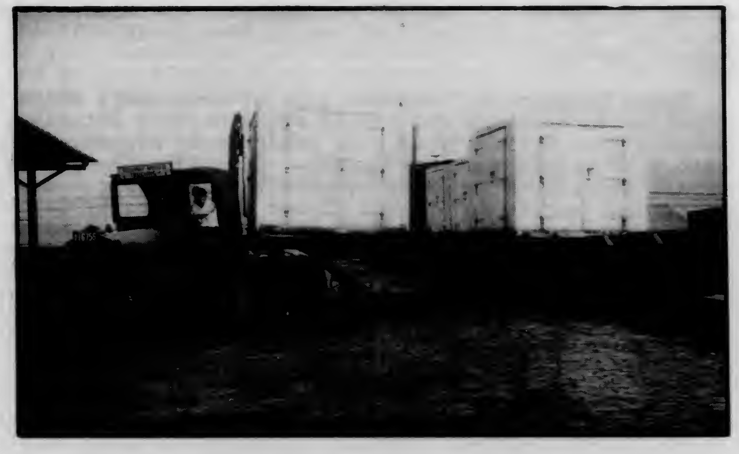
The Security Storage Company own and operate containers of the lift type, equipped with large double-hinged doors at one end and fitted with loops for handling by overhead crane. They are used for transporting household goods, principally between the United States and foreign countries. There are 64 of these containers of which 10 are of aluminum construction, weighing 1,900 pounds, and the remainder are of steel construction, weighing 4,000 pounds, with a weight capacity of 13,000 pounds and outside dimensions as follows: Length 14 feet 9 inches; width 7 feet 6 inches; height 8 feet 2 inches. The aluminum containers have a volume capacity of 700 cubic feet, while the steel containers have 800 cubic feet capacity. There are also 12 all steel containers of 600 cubic feet and 10,000 pound capacity, each with a tare weight of 3,720 pounds and overall dimensions as follows: Length 11 feet 5 inches; width 7 feet 6 inches; height 8 feet 2 inches.

Railway Motor Trucking, Inc., J. F. McGinness, President, has designed and built closed body containers, which combine the roll-off and skid principle. The containers, which are 9 feet long, 9 feet wide, 7 feet 8 inches high, have large double-hinged doors on each of the four sides and load transversely on flat cars. The base of the container, which is 8 inches high, consists of four channels or skid-rails, in which are mounted 12 retractable rollers, 6 rollers to each pair of channels. The rollers, each of which are 7 inches in diameter and 18 inches long, are slightly beveled and are roller bearing equipped. By means of a worm and screw mechanism incorporated in the container base, the rollers are raised or lowered, the four center rollers dropping lower than the others, which facilitates turning and rocking the container and assists in moving it over uneven surfaces.

Refrigerated Containers. Some work has been done in developing refrigerated containers for transport on and in railroad cars. The L.C.L. Corporation has a number of these containers of the leg type with outside dimensions the same as its merchandise container; namely, 9 feet 3 3/8 inches long; 7 feet 2 1/2 inches wide; 9 feet 4 inches high,



Containers Mounted on Standard Flat Car.
Railway Motor Trucking, Inc., J. F. McGinness, Designer



Transfer of Roller Type Containers
Between Flat Car and Highway Vehicle

exclusive of icing hatch in roof. The container has one large single-part door in one end, is thoroughly insulated, can be manipulated by crane as well as lift truck, and may be refrigerated by water ice, solid ice, solid carbon dioxide (dry ice), or Flakice, which is carried just under the container roof, is equipped with temperature control, and has a volume capacity for carrying produce of 260 cubic feet. The container is carried in the same gondola cars as are used in transporting the merchandise containers.

A similar refrigerated container of essentially the same dimensions has been developed experimentally by Mr. R. V. Grayson. The container stands on four legs 13 inches high, and has a triple shell cylindrical tank in the roof equipped with a removable head at one end, the overall height of the container being 9 feet 10 3/4 inches. The overhead tank is charged with solid carbon dioxide. Through the operation of an automatic valve, dampers, ports and a turboblower, the refrigerating gas is circulated and temperature control maintained. The container has a volume capacity for lading of 288 cubic feet.

Major Elihu Church has developed a small refrigerated container to be carried inside of box, express and baggage cars or hauled by any highway truck. The container is made of sheet steel, is mounted on rollers and is 6 feet long; 2 feet 8 inches wide; and 6 feet 6 inches high; with volume capacity of 80 cubic feet; and light weight of 700 pounds. The container is thoroughly insulated, is equipped with temperature control and is designed to use solid carbon dioxide as the refrigerant. Some 50 refrigerated containers have been built and they have been used intermittently in railroad and express service.

Inner Containers. Another type of container, which is effective in handling and transporting certain articles, is designed for carriage inside of railroad or highway vehicle bodies, or within boats or barges. Such containers have small overall dimensions in order to pass through vehicle and plant doors, down warehouse or shop aisles and be easily carried on elevators or conveyors, as well as on industrial hand or power trucks or on industrial trailers. An essential requirement of a small container is that it shall have overall dimensions which permit multiple container units to be stowed within larger containers, or inside of other transport vehicles with a minimum waste of space. Such containers may be single skids or pallets, partly enclosed or with fully closed bodies similar to those on containers previously described.

The simplest form of container is a pallet or skid platform. The former is a double platform, generally of wood, only a few inches high, which can be handled by a fork or finger-lift truck, or by slings. It is inexpensive, usually of non-returnable construction, and conserves stowage space due to low height. The skid is merely a platform mounted on two runners or four legs, generally with a clearance of 12 inches or more between floor and bottom of platform so that the skid can be handled by any lift truck. Skids are used in many industries and warehouses, each concern having its own design, or purchasing from skid manufacturers each of which have several designs. The skid may be of wood, or metal, or a combination of the two and may have removable or fixed sides composed of slats or solid members. Further additions and refinements result in a closed container. Despite the variety of designs prevailing, much good was accomplished several years ago by the U. S. Bureau of Standards in getting skid manufacturers, shippers and industrial users to agree upon standard dimensions as follows:

Clearance heights, floor to underside of platform, 8 inches or 12 inches. Minimum clearance width between legs or runners, 29 inches. Overall dimensions, horizontal: Size 1 ("Freight Skid") 60 inches long, 42 inches wide. Size 2 ("Stores Skid") 54 inches long, 32 inches wide.

While Size 1 was developed to carry commercial freight in transit and Size 2 is intended primarily for use in handling, storing and distributing railroad and industrial stores, it is possible to carry several units of either size skid in a larger container or demountable truck body of acceptable commercial size without wasting space. Of the five million skids estimated to be in use throughout the country, only a small proportion conform to the two sizes of platforms (horizontal dimensions), although a much larger proportion conform to the standards of clearance height and width between runners or legs. Many of the skids are of temporary construction, of wood, costing $2 to $5 each. Others are more substantially built, costing from $8 to $25 each, depending upon design and capacity. Substantial all-metal skids of corrugated steel for storing many rough commodities cost from $3 to $8 each. It is estimated that there are at least 250,000 hand-lift trucks and 50,000 power-lift trucks in use throughout the country handling skids, pallets and packaged materials. As a variation of the permanent, well-constructed skid one finds the four-wheel industrial truck in which ball-bearing casters, rollers and wheels replace the skid-runners or legs. Such trucks are extensively used at freight stations and industrial plants, being manipulated either by hand or in "trains" pulled by an industrial tractor. A well-built, four-wheel truck or trailer costs $60 or more, is subject to considerable maintenance expense, particularly if abused, is difficult to fasten securely within a vehicle, and so represents quite expensive equipment if used in place of a skid for shipment inside a larger container or other transport vehicle.

The purpose of shipping goods on skids is, of course, to eliminate expensive handling and rehandling of individual pieces, as well as to speed up handling and shipping, move goods in lots suitable to commercial requirements or production schedules and reduce the cost of packing, storing and distributing products. The saving to industry, through a nationwide use of standardized skids or similar devices to be used within plants as well as between shippers and customers, might easily amount to more than the total transport charges now paid by shippers.

The containers described in the following paragraphs are the ones brought to the Coordinator's attention. While there are undoubtedly many others in actual use, the ones mentioned here cover the general range of "inner" containers.

Charles C. Stetson has submitted specifications of the Ajax all steel container, which is designed especially for handling l.c.l. commodities. The unit is 7 1/2 feet long; 4 feet wide; and 6 1/2 feet high; has a volume capacity of 180 cubic feet; a load capacity of 3,250 pounds; and a light weight of 1,700 pounds. The container has one end door, 6 feet by 3 feet, and is mounted on skids, which permit handling of the container by hand or electric lift trucks. Two of the units fit abreast in a standard box car, and they are fitted to lock to the end of the car and to each other. This assists in bracing the load, and the skids are roughened to assist further against shifting in transit.

Church Freight Service (Elihu Church) has built and operated containers designed particularly for merchandise shipments. These containers have the same outside dimensions, and are of the same construction as the Church refrigerated containers except for the omission of insulation and refrigerating equipment. The merchandise container is 6 feet long; 2 feet 8 inches wide; 6 feet 6 inches high; weighs about 400 pounds; has a volume capacity of 90 cubic feet; and is of steel construction mounted on rollers. Twenty of the containers load in a 40-foot box car.

Other Containers. The American Car and Foundry Company has designed and built numerous containers, having furnished containers of the lift-van type for the Anglo-American Lift Van Company as early as 1904.

Mr. H. W. Kirchner has designed and patented a system for handling containers by means of specially constructed ramps. At terminals ramp tracks would be built parallel and outside of the railway tracks, and approximately at 10 foot gauge, about level with a flat car platform. The ramps would have a concave rail, capable of taking a 4 inch ball, the ball acting as a caster on the container, and revolving in any direction. The container would be wider than the flat car with an overhang of about 5 inches on either side.

A flat car loaded with containers would be pushed between the ramp tracks, the casters catching the concave rails of the ramps and following them, eventually clearing the flat car, and leaving the containers on the ramp. In loading the operation would be reversed. The same plan would be followed in loading and unloading containers onto trucks. Movement from railway ramps to truck ramps at right angles would be accomplished by placing movable bridges in the proper position, a motor truck or tractor furnishing the power to roll the container over the bridge.

George L. Bennett has patented a design for a container which contemplates construction of units of 6,000 and 10,000 pounds capacity with an estimated tare weight of 2,200 and 2,600 pounds, respectively.

The containers would be mounted on rollers, one set to be driven by hand lever and gears, and the other set arranged with steering device. The traction rollers could be locked by meshing gears.

Roger H. Clapp has patented a container equipped with wheels which may be retracted by hand under load of 10,000 pounds. No specific dimensions or capacity are given.

Edgar A. Stoll has patented a container with flanged wheels to be handled manually on tracks, to be built on the bodies of railway and highway equipment. The plan proposes various sized units.

P. J. Backus has patented what is termed a "Tray Car", for the loading of open, low flat containers in tiers on a car specially equipped for the purpose, a shelf arrangement permitting the sliding in and out of the containers, which would be handled to and from a truck chassis by means of a winch or crane. The trays would be used for loading of bulk commodities and each would have a capacity of two to three tons.

Container Transfer Equipment. Highway trucks, tractors and semitrailers of special design or fitted with auxiliary devices to effect transfer of containers between rail and highway vehicles have been specifically described in connection with the following container operations: The Milwaukee Electric Railway and Light Company; Acme Fast Freight, Inc.; Mount Vernon Car Manufacturing Company; B. F. Fitch skid container. s

Supplementing the skid transfer, or as a substitute therefor, Mr. Fitch has developed, and has in operation in connection with the Cincinnati Motor Terminals Company, a light-duty gantry crane with push-button control cable, composed of standard automotive, mechanical and electrical units mounted on a structural bridge, which cost approximately

$1,500. A structural steel runway with foundations, for use with the crane in transferring demountable bodies, has been installed at a cost of $20 per foot of runway length. Such a development with the relatively low capital expense involved encourages overhead crane installations by industrial concerns and transportation agencies, even where traffic volume is quite light.

N. A. Ludington has designed a transfer device to be attached to a truck chassis used in handling containers, but it is limited to containers of the leg type, or else requires special construction of the railroad car. The device consists of a sliding frame resting upon the chassis, which is inserted under the containers. This sliding frame is equipped with elastic expansible members which are inflated by air, and which raise the containers clear of the car floor when the sliding frame is drawn forward and places the container in position on truck. The expansible members are then deflated, and the container settles down on the truck when the slide is withdrawn and the operation repeated. To transfer containers from truck to car, the operations are reversed. The height of the truck platform is adjusted by hydraulic cylinders located at rear of truck.

Corby, Tunberg, Inc. have designed equipment for the handling of various sized containers, which consists of an adjustable four-leg assembly which is to be attached to the container as a temporary fixture. The legs,which apparently operate similar to a screw jack, may be mechanically raised or lowered singly or as a unit from one point. The legs would be equipped with swivel joints and could be fitted with wheels to provide mobility.

A design for a ball-bearing, four-wheeled "shifter" adjustable to varying heights is also proposed for the handling of the containers to and from railway equipment. The leg assembly mentioned would permit the "shifter" to be placed underneath the container, or removed therefrom.

For road haul a heavy-duty, four-wheeled, pneumatic-tired "dolly" is proposed to be locked to the rear underframe of the container, which would then be handled as a semitrailer by a tractor or truck.

R. J. Needham proposes a plan to fasten light weight rails along the side sills of flat cars to provide a track for a travelling self-propelled crane, which would be utilized to load and unload containers. The crane would travel the entire length of the train. The flat cars would be provided with pockets, in which container legs would fit.

R. L. Pryor has submitted a plan for loading and unloading wheeled containers to and from flat cars and trucks by means of inclined platforms and tracks, the platform and railway tracks being built at about a ten degree angle to permit the rolling of containers on and off of flat cars by gravity. Small containers would be loaded crosswise of the car; and a turntable arrangement (part of the permanent equipment of each flat car) would be swung laterally for the loading of large containers. After running a container onto the turntable, it may be swung into position, longitudinally on the flat car.

Ralph F. Mattox has designed a mechanism to be incorporated in the chassis of a truck or semitrailer, which operates as a moving table to transfer containers between rail car or fixed platform and highway vehicles. The design provides for vertical movement of the mechanism so that differences in elevation of platforms or vehicle floors can be equalized. It is proposed to utilize the truck or tractor power plant to operate the transfer mechanism by means of a power take-off.

Containers Abroad. Outside of the United States the principal use of containers in transportation service is found in Great Britain and Continental Europe, where containers have been in use at least since 1892. Each European country has developed its own types of containers, but to facilitate interchange of containers between nations, the International Container Bureau recommends standard specifications for various types of containers which move in international traffic.

The gross weight (load plus tare) should not exceed 5 metric tons (metric ton = 2204.6 pounds) for heavy-type containers, and 2.5 metric tons for containers of light type with maximum overall measurements as follows:

Heavy Containers

	No.	Length	Width	Height
Closed Type,	62	10 ft. 8 in.	7 ft. 1 in.	7 ft. 3 in.
	42	7 ft. 1 in.	7 ft. 1 in.	7 ft. 3 in.
Open Type	61	10 ft. 8 in.	7 ft. 1 in.	3 ft. 7 in.
	41	7 ft. 1 in.	7 ft. 1 in.	3 ft. 7 in.

Light Containers

	No.	Length	Width	Height
Closed Type,	22	7 ft. 1 in.	3 ft. 5 in.	7 ft. 3 in.
	201	7 ft. 1 in.	3 ft. 5 in.	3 ft. 7 in.
Open Type	21	7 ft. 1 in.	3 ft. 5 in.	3 ft. 7 in.

The conditions require that all containers be fitted with ventilators which must not permit rain to enter. Also that all containers must rest on runners, (longitudinal) and that these runners, (skids) have metallic surfaces.

Great Britain. A total of 9,400 containers were in service on the British Railways in January 1934. The Great Western Railway owned 1,500; The London Midland and Scottish Railway 5,000; The London and North Eastern Railway 1,600; and the Southern Railway 1,300.

The approximate number and dimensions of the various types in service are as follows:

Number	Type	Length	Width	Height	Capacity Tons
2,070	Closed	7 ft. 3 in.	6 ft. 6 in.	7 ft. 3 in.	2.5
3,010	Closed	13 ft. 8 in.	6 ft. 7 in.	7 ft. 6 in.	4.
1,315	Open	6 ft.11 in.	6 ft. 6 in.	3 ft. 4 in.	3.
1,600	Open	13 ft. 8 in.	6 ft. 8 in.	3 ft. 8 in.	4.
1,130	Insulated	13 ft. 6 in.	6 ft. 8 in.	7 ft. 6 in.	3.5 and 4.
200	Furniture	15 ft. 3 in.	7 ft. 0 in.	8 ft. 0 in.	3.
75	Tanks, Hoppers and Miscellaneous.				

Units with a capacity of 10 tons for carrying heavy raw material and brick are now under test.

These containers are handled principally by cranes and the number of stations equipped with cranes is comparatively large, little attention being paid in Great Britain to containers fitted with wheels or rollers or constructed for use with traveling elevators.

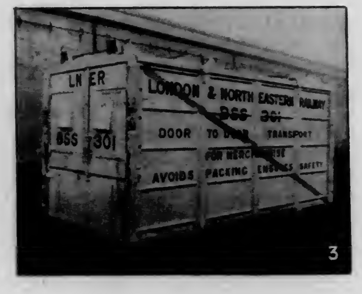
Automobile cranes with carrying capacity up to 6 tons have been put in service and have proven successful, their advantage being that they can be used in the station or outside. Rails are sunk flush with street level, so that automobile cranes can easily cross tracks at stations.

Early types of containers were of wood construction, but more recent ones are built of steel with the view of increasing strength and durability. Aluminum alloys have been considered, but the advantage of low tare weight seems to be counterbalanced by unusually high initial cost, in the opinion of British railway authorities. Most closed types of containers have doors in both narrow sides, usually three-leaf doors, of which the bottom leaf covers the whole width and swings down. As a rule only the insulated containers have two folding doors.

The British railways have operated door-to-door and motor transport service for some years, and have found that container service reduces the total cost of transportation.

GREAT BRITAIN

1



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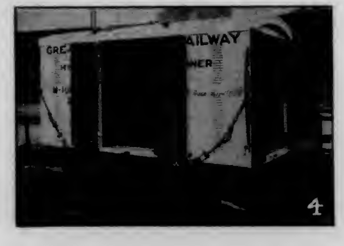

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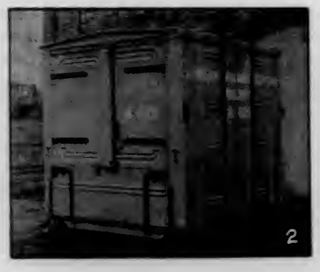


2

Figure 1 - Steel Container for Transport of Stone and Coal, London Midland & Scottish Railway. Figure 2 - Closed Container of Steel Construction, London Midland & Scottish Railway. Figure 3 - Steel Container of the London & North Eastern Railway. Figure 4 - Container for Transporting Meat - Great Western Railway.

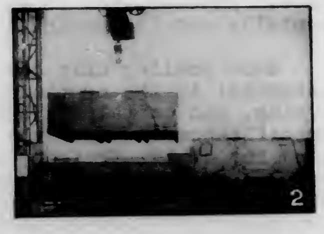
The smallness of British trucks apparently restricts the size of the containers. The use of a larger number of tractors with trailers is expected to achieve a material reduction in the cost of container traffic.

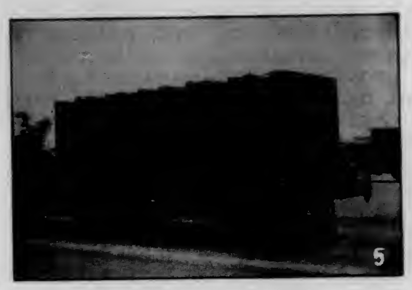
France. The number of containers owned by the seven large railway companies on May 1, 1933 was 368, and it was contemplated that 300 more containers would soon be put in service. In addition, there were 2,220 privately owned containers being used chiefly for transporting the following commodities: Furniture, ceramics, crockery, chinaware, glassware, textiles, papergoods, flagstones, building material, heating apparatus, bakery goods and meat.

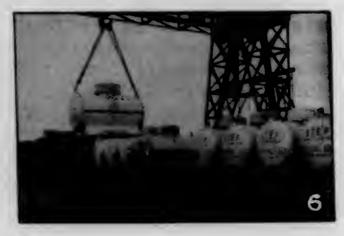
The capacity of these containers varies from 1/2 ton to 5 tons and in a few instances exceeds 5 tons, the largest ones being used for the transport of sugar and having a capacity of 10 tons. The overall dimensions also cover a wide range, approximating 5 to 17 1/2 feet in length; 2 to 8 1/2 feet in width; and 3 1/2 to 9 1/2 feet in height. The open containers are 2 1/2 to 8 1/2 feet high.

The containers are principally of flat bottom type, or flat bottom resting on skids. Cranes both mobile and stationary are employed in most instances for transferring,and the low drop sides of the small French cars are the only protection other than friction on the floor against shifting in transit. Three leaf doors in both ends are quite common, the lower door extending the entire width and dropping down. Wooden insulated containers, employing ordinary or "dry ice", are successfully used for the transport of perishable goods. With the exception of the double walled insulated and the tank units for the transportation of milk, many of the containers are collapsible for return movement when not loaded.

Germany. In 1934 there were 111 large containers owned and being used by the State Railways in Germany, and also 80 steel containers being used for the exclusive transport of lime and limestone. Two types have outstanding features; one being mounted on retractable wheels, swivel operated; the other having wheels which can be deflected. The wheels are pneumatic tired, so that the containers are designed for road transport by horse or as a truck trailer. The wheels are moved by means of a hand winch. The present high cost of this type of mobile container prohibits its general use. The container is made of stiffened steel and is approximately 8 feet 6 inches long; 7 feet 4 inches wide; and 9 feet high (container only). It weighs empty about 2 1/2 tons and carries a load of 4 tons. In spite of size and weight, the containers are very mobile, and when carrying a light load can be moved by hand. Loading at points not at platform level is accomplished by means of hand winch mounted on the flat car. Three units may be loaded side by side on a flat car.







FRANCE

Figure 1 - Type 62 Container on Truck. Figure 2 - Crane Transfer of Type 61 Container. Figure 3 - Transfer of Type 62 Container by Motor Truck Crane. Figure 4 - Collapsible Comtainer of the Paris-Lyon-Mediterranean Railway. Figure 5 - Type 62 Containers on Rail Car. Figure 6 - Transferring Milk Containers.

The German State Railway disapproves of the principle of designing large containers for handling by cranes or traveling elevators only, the belief being that containers on their own wheels are the only type suitable for actual service. However, the roller type is being studied experimentally and it appears it will increase in importance.

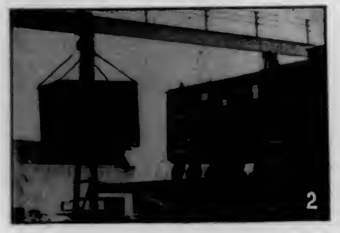
Much smaller unit containers of all types are considered essential in the operation of the State Railway's l.c.l. system, and containers are being used increasingly to carry specific commodities from consignor to consignee without handling of the freight en route. These small containers are of both open and closed types and can be loaded through the doors of box cars. The containers rest on legs to permit handling with hand or electric traveling elevators. On October 1, 1933 there were 6,500 small containers in use. They are of two principal sizes of the following approximate dimensions:

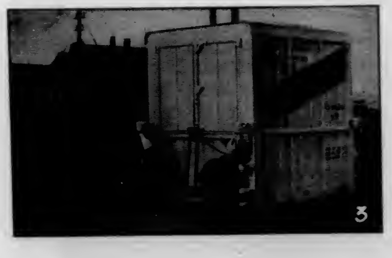
Model 1	Model 2
Length, 5 feet	Length, 5 feet 7 inches
Width, 3 feet	Width, 3 feet 4 inches
Height, 3 feet 4 inches	Height, 4 feet
Capacity, 1 ton	Capacity 1.2 tons

In Germany, beginning in the fall of 1933, store-door collection and delivery service was extended to include carload shipments, as a service to shippers without side-track facilities. Since the inauguration of the plan 6,300 carloads were handled in a 14-month period. In this operation the entire freight car is transferred, it being mounted on highway chassis, which consists of two units each running on eight wheels, so articulated as to permit negotiation of sharp curves. The cushioning provided by the rubber-tired wheels is sufficient to prevent damage to the highways, even under heavy load. Each truck chassis is provided with auxiliary connecting and steering rods, which permit the two units to be widely separated for the handling of long cars. In transferring freight cars from railway to highway, the truck units are backed against a stub end track which is at the same level as the rails on the truck units. A form of hinged rail, located at the end of the stub tracks, permits the tracks to be swung laterally, thereby effecting alignment with the tracks on the truck units. While en route to destination the rail car is braced with tie rods attached to the truck chassis. Cars of 60 tons capacity have been successfully handled. The speed limit on highways has been held strictly to 10 miles per hour.

Italy. Following the resolution of the International Container Committee, recommending the appointment of national groups, on March 3, 1932, the State Railways of Italy created the S.I.C.O.N. with a capital of 3,000,000 lire, the company to be the sole agent of the railways on all matters relating to containers, and it has acquired since the monopoly of container transport of all merchandise by rail.

GERMANY





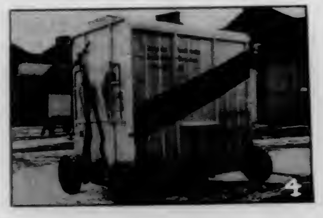


Figure 1 - Type 62 Standard Container Open, with Rollers Retracted.
Figure 2 - Small, Wheeled Container Being Handled by Crane.
Figure 3 - Container with Swivelling and Retractable Wheels.
Figure 4 - Rubber Tired Container with Deflected Wheels.

The containers in experimental use on the State Railways of Italy conform closely to the specifications of the International Container Bureau, except that they are mounted on metal legs to readily permit the handling by traveling elevator, which method has been adopted for general use, although they may be temporarily fitted with rollers to provide mobility.

The company has been particularly successful in perfecting a refrigerator container which is sufficiently insulated to insure a constant temperature level over a period of five days. This container has a capacity of two tons, in addition to carrying approximately 600 pounds of ice in two grilled boxes. The lading is precooled by means of a mobile refrigerating unit developed for the purpose. The unit consists of a set of ammonia refrigerating machines developing 70,000 units of cold per hour, enclosed in a container, (10 feet 8 inches long; 7 feet 1 inch wide; 7 feet 3 inches high) weighing less than 5 tons, including weight of container. A second container of the same size holds the cooling water of the compressor, as well as the equipment required for the refrigeration of the water. A third container of the same size contains an ice plant producing approximately seven tons of ice per day, or sufficient to ice 24 containers. The method is reported to be cheap and practical.

Austria. In Austria a number of companies are using their own containers for rail transportation and milk containers have been used for some time, railway cars and trucks being equipped with saddle shaped bases for their carriage.

Egypt. The Egyptian State Railways have been using furniture containers of wooden frame construction with plywood covering to reduce the weight. They measure approximately 12 1/2 feet long; 6 1/2 feet wide; and 8 feet high. Road transport is by tractors with semitrailers, the containers being handled by crane.

The use of containers in other European countries has not been widely developed, but expansion is considered based on the experience gained through their use in other countries.

Highway Vehicles on Flat Cars. The oldest operation which carries highway semitrailers on flat cars is that of the Chicago, North Shore and Milwaukee Railroad, between Chicago, Milwaukee and intermediate stations. The semitrailers have closed bodies approximately 16 feet long; 7 feet wide; 6 feet high; of 600 cubic feet capacity; and are loaded either 2 or 3 semitrailers per flat car. At the Chicago railhead there is a single stub-end track accommodating several container cars with a ramp from street level to the height of car floor at the end of the track. Ordinary flat cars with special attachments for securing semitrailers are used. A highway tractor backs a semitrailer up the ramp

ITALY

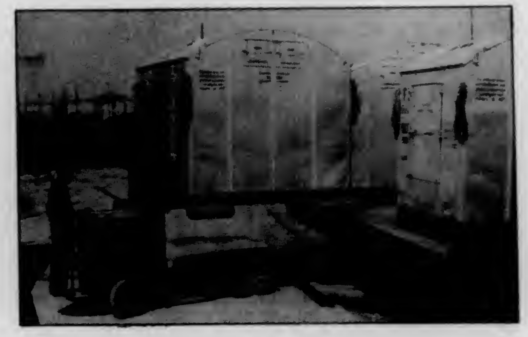


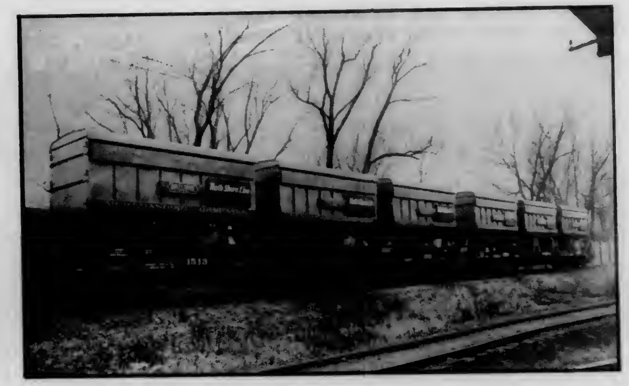
Figure 1 - Loading a "Scion" Refrigerating Container on Railway Car Using Electric Lift Truck.

Figure 2 - "Scion" Refrigerating Container Refilling with Ice.

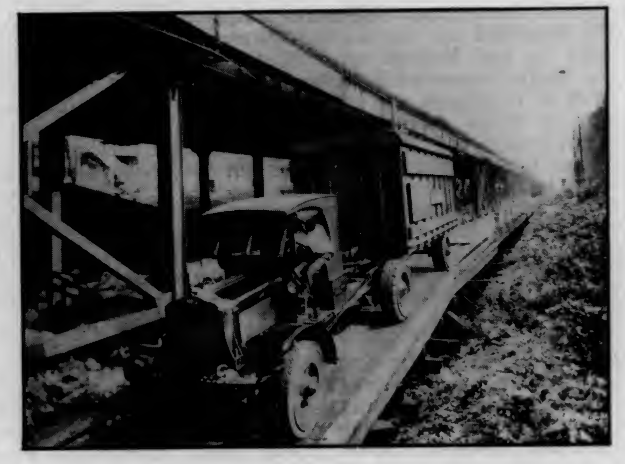
Figure 3 - Loading "Scion" Container with Perishable Fruit.

onto the flat car and perhaps over several cars until the last empty is reached, the highway vehicles being assisted in "tracking straight" by guides attached to car decks. The tractor then uncouples, returns over the empty cars, goes down the ramp and repeats with another semitrailer. Considerable difficulty is oftened experienced in getting the semitrailer onto the first car with all tractor and semitrailer wheels parallel. It is also necessary, of course, to load the semitrailers on the cars in station order, if unnecessary switching is to be avoided. At the Milwaukee terminal the transfer layout is much better, consisting of a fantail of stub tracks with the highway at the level of the flat car decks. Semitrailers are handled on and off the cars much more easily and can be loaded as they arrive on any one of several tracks. In addition to transporting their own semitrailers, the railroad handles any standard highway vehicle less than 32 feet long at stated rates, based on the size of vehicle and load carried. A number of shippers make regular use of this service. While the flat cars are equipped with special clamping devices to secure the railroad's semitrailers, other vehicles are fastened to the cars by means of chains, turnbuckles, rods and wedge blocks. It sometimes takes two mechanics (not including the vehicle driver) ten to fifteen minutes to secure one semitrailer to a flat car. A well-developed terminal layout is essential to speed and economy in loading semitrailers onto cars.

A recent operation in which highway semitrailers, carrying merchandise freight, are transported on flat cars is that of the Keeshin Motor Express Company operating overnight service between Chicago and the Iowa cities of East Moline, Moline, Rock Island and Davenport, as well as between Chicago and Peoria, Illinois, over the Chicago, Rock Island and Pacific Railroad lines. Some 140 semitrailers costing $1,600 to $2,000 each, and weighing 5,500 to 7,000 pounds; with bodies 20 feet 7 inches long; 7 feet 2 inches inside width; 6 feet 6 inches inside height; of 910 cubic foot capacity; 20,000 pounds load limit; and 13,900 pounds average load, are in regular service. Standard flat cars are used, the semitrailers being loaded two to a 46-foot car, the cars of 58 tons nominal capacity having a light weight of approximately 21 tons each. The tare weight of a car carrying two semitrailers is twice the average payload transported. For rail movement chains permanently fastened to flat cars are secured to the semitrailer bodies by hooks, which engage lugs on the semitrailers, the chains being drawn tight by turnbuckles. Chock blocks are used to prevent shifting of semitrailers on cars. Each flat car is equipped with a steel tail gate or apron to provide a continuous runway between flat cars. The average length of time required to pick up a semitrailer with tractor, place it on a flat car and drive tractor off the car, is six minutes, while to fasten the semitrailer



Semi-Trailers Mounted on Specially Equipped Flat Cars.
Chicago North Shore & Milwaukee Railroad Company



Placing Highway Semi-Trailer on Flat Car.
Chicago North Shore & Milwaukee Railroad Co.

to the flat car takes about five minutes with two men doing the work. To effect the transfer single and multiple stub end tracks are used with ramps of flat car height, having a 40-foot runway and 50-foot incline built adjacent to the tracks.

A similar rail-highway service has been operated between Chicago and St. Louis by the Alton Railroad, which transported highway vehicles of any truckman who desired to use the service at a stated charge per truck, the vehicles being loaded on flat cars. The operation was not successful.

Special railroad cars have been designed to carry semitrailers and trucks, and special highway vehicles to be carried on railroad cars are advocated by some inventors. That such equipment is not in commercial use may be due to the fact that the designs proposed necessitate extensive changes either in highway or railway rolling stock, or perhaps both.

The oldest system utilizing combination rail-highway vehicles is that of Joseph C. Bonner, which had initial tests in 1895, and has had actual tryouts on electric railways in and about Toledo, Ohio, and on the Isle of Man. The Bonner Rail-wagon consists of a special highway trailer, approximately 21 feet long and 8 feet wide, with wheels independently mounted on brackets attached to the trailer frame. A rail-wagon is end loaded on a flat car of special design by hauling the wagon up a ramp onto tracks, having a gauge of about 7 feet which span the railroad track. When the wagon is in place on these raised tracks, the railroad car is run under the rail-wagon. The clearance between car and rail-wagon is small, and lever-operated clamps on the car engage the rail-wagon. As the car reaches the end of the ramp, the wheels of the rail-wagon are gradually lowered until the chassis rests upon the railroad car. In unloading rail-wagons, the process is reversed. The railway car consists of an underframe without center sills, constructed with side-bearing trucks which because of the necessity of reducing overall width are built with journal bearings inside.

The Merchants Despatch Transportation Company has developed a special flat car equipped with two turntables to transport two milk tank highway semitrailers. The rail unit is an all steel flat car, mounted on two passenger-type, four-wheel, cast-steel truck frames. A built-up steel turntable with roller bearing wheels, secured at the center with a pin extending through the floor plate of the flat car, is mounted near each end of the car. The turntables revolve on a circular rail 4 feet 4 inches in diameter, welded to the car floor plate. Stationary wheel blocks, riveted to the turntable at one end act as trailer stops when loading, after which movable wheel blocks are placed in front of the rear wheels. After a semi-trailer is placed on the turntable, the tractor uncoupled, and

Inter-City Movement of "Keeshin" Semi-Trailers on
Flat Cars of Chicago, Rock Island & Pacific Railway Co.

Highway Freight Carrying Unit.
Keeshin Motor Express Company.

the unit turned to the proper position for rail travel, a movable frame jacking device located near the middle of the car centers and raises the load from the jack wheels of the semitrailer, allowing them to ride free. Two screw jacks located on the flat car near the end sill also raise the load off the rear axle, so that the rear tires carry only the weight of the rear axle assembly. The entire tank unit is secured against side sway and end motion, while in rail movement by rods with turnbuckles running diagonally from each corner of the semitrailer chassis to side sills of the flat car. To load and unload semitrailers, it is necessary to have a platform or runway at the height of the turntable deck and a ramp leading to the highway or street surface. The milk tanks each have a capacity of 2,050 gallons, and are mounted on standard highway semitrailers.

Mechanical Handling Devices (Francis System) has designed semitrailers to be carried two per flat car, the rear axle of the semitrailer fitting on a solidly mounted block on the floor of the flat car. The mountings of the semitrailer drop leg wheels are of the swivel type, permitting the tractor to push the forward end of the semitrailer in proper location on the flat car, and also pulling it off the flat car onto an elevated platform. Semitrailers can be end loaded on a flat car at a stub track having a ramp, or can be side loaded by constructing a platform at the height of the car deck wide enough to permit manipulation of tractor and semitrailer and equipped with a ramp at each end. The tractor should have a cable-operated winch to assist in shifting semitrailers between platform and flat car.

Joseph F. Johnson has designed a revolving car deck for the loading, unloading and carriage of complete trucks, trailers or semitrailers on well type railway cars. The device mounted in the center of the car operates as a turntable and is a part of the permanent equipment of the car. The turntable, which is constructed with two hinged drop ends to be used as ramps, is rotated laterally for loading or unloading highway vehicles. When loaded, the turntable is swung back with the vehicle in longitudinal position on the car and locked. Either one or two highway vehicles may be accommodated, using one turntable per car.

Karl J. Bayerl has designed a special railroad car for carrying highway semitrailers, the device consisting of a means for loading semitrailers sidewise on a drop frame railroad car, the highway wheels being loaded in the well portion of the car, and the fifth wheel of the semitrailer secured to a platform at the end of the car.

H. C. Tully has devised a plan for transporting semitrailers on flat cars which have been equipped with runways sunk below floor level on either side to provide a gangway for trailer wheels. The trailers would be loaded and unloaded over portable ramps with a crawler tractor furnishing the power, the operation being accomplished in a manner very similar to that used in loading circus wagons.

Dual Service Vehicles. Another type of equipment which is designed to coordinate rail and highway, but not waterway, transportation service contemplates a freight-carrying vehicle which will operate with equal facility on railroad tracks or roadway surface. Many ingenious ideas have been advanced, some of which are in the blueprint stage, others consist of small scale models, and a few have been built as full size experimental vehicles. To date none of the vehicles described in the following paragraphs are in commercial operation.

Hendrikson-Mead Engineering Company has developed a 6-wheel, dual rear axle, heavy-duty, road-rail unit, to be equipped with dual wheels on common axles. The unit is rated at 40,000 pounds gross weight and is designed to pull two 32,000 pound trailers. The flanged rail wheels, inside the vehicle wheels, are 34 inches in diameter and made of high-grade alloy steel. The pneumatic tires used in highway travel are removed when the vehicle is railed and replaced at rail destination. The vehicle is equipped with couplers and provision is made for continuous power brakes and all safety appliances. The unit is railed or unrailed at any surfaced crossing.

The Hughes Roadrail Equipment Corporation has designed a semitrailer with dual rear axle and dual service wheels. Each wheel consists of a flanged steel wheel for rail travel, while outside of and concentric with each flanged wheel is a full pneumatic tire which is dismounted when the semitrailer is on the rail, but which supports the load on the highway. On the semitrailer frame over the rear axle is mounted a fifth wheel, so that semitrailers can be connected to form a train for the rail haul. The semitrailer body is approximately 24 feet long; 8 feet wide; and 8 feet high; of 20,000 pound capacity; the rear end of the body being 5 feet 8 inches ahead of the rear end of the semitrailer in order to permit coupling of another unit with the fifth wheel. Both air and hand brakes are provided on each semitrailer and the overall length of semitrailer attached to a cab-over-engine design tractor is 38 feet 9 inches.

D. W. Main has designed the "Main Road-Rail Attachment" for trucks and buses which has been tested successfully. The attachment consists of two pairs of pilot wheels mounted at the front and rear of the truck. These wheels, which are operated by a lever from the driver's cab, can be retracted about 5 inches above the ground for travel on the highway. On the rails the front pilot wheels carry most of the front-end weight, and the rear pilot wheels enough weight to hold the vehicle to the rails and prevent swaying. The regular truck tires rest on the rails and provide traction, the same as they do on the highway. The vehicle can be driven on or off the rails at any surfaced crossing.

The Twin Coach Corporation has developed a highway-rail vehicle, which employs pilot wheels fore and aft of each of the regular pneumatic tired truck wheels. The pilot wheels are lowered to within 1/4 inch of the rails, when the unit operates as a rail vehicle, and are raised about 4 inches above the ground, when the vehicle is operated on the highway. The flanges on the small, rubber-insulated pilot wheels are about 1/2 inch deeper than standard steam practice. The flanges serve to guide the front wheels of the vehicle instead of locking them rigidly. The face of the pilot wheels does not touch the rails, although the flanges touch occasionally. In case of puncture the vehicle would drop 1/4 inch and the pilot wheels, which are mounted with Timken bearings would carry the load. The vehicle has been successfully operated under test for some time.

W. A. Hutton has designed and patented a road-rail unit equipped with rigid dual wheels mounted on a common axle. The flanged wheels for rail service, being fitted inside the highway pneumatic-tired wheels, would be slightly smaller.

The plan includes an inclined platform for track approach, and a platform built flush with the rails with ramps parallel to the rails at either end to facilitate railing of the vehicles. The ramp approach and surfacing plan would be carried out at switches, frogs, etc., so that the highway wheels would clear such obstructions.

C. C. Nugent has in experimental use a truck equipped with flanged steel wheels mounted on the same axle, but inside of the regular pneumatic tires. When operating on a railroad track the tires are almost entirely deflated, so that the vehicle passes readily over switches at a speed of 40 miles per hour. On the highway with the tires inflated to normal pressure the flanged wheels clear the road surface.

W. H. Wilcox has designed and patented the "Wilcox Road-Railer" which embodies two sets of wheels. The wheels operate on a common axle, the highway wheels outside. Both sets of wheels are mechanically retractable by means of a complicated hub mechanism operated with compressed air. For road travel the pneumatic-tired wheels are shifted close to

the flanged wheel. On the rails the pneumatic-tired wheel is shifted outward and upward for clearance of the flanged wheels, and to clear track switches, etc. The unit is railed and unrailed at surfaced crossings.

E. O. Keator has designed the "Duplexmobile", a road-rail unit with dual wheels on a common axle, the flanged wheels being fitted inside the regulation truck wheels. The pneumatic-tired truck wheels, which remain in normal position at all times, would require the readjustment of frogs, switches, etc., which feature has been provided for in the plan. The unit is driven on or off the rails at surfaced crossings.

C. S. Nelson designed, patented and has operated under test the "Nelson Roadrailer", which employs dual wheels for operation on highway and rails. The flanged wheels are fitted inside the regulation truck wheels. The wheels operate on a common eccentric axle and either set are retractable by a mechanism operated from the driver's cab. Railing is accomplished at surfaced crossings.

Dabney P. Owens is the inventor of a dual purpose wheel, which provides a steel flanged wheel for rail travel and a pneumatic-tired wheel for highway use. By a mechanism not described, the pneumatic wheel is retracted and fits into the recessed flanged wheel for rail travel. By the same device it is forced out and lowered to contact the road for highway travel. The latter operation raises the flanged wheel 4 inches from the ground.

K. Y. Messick has patented the "Messick" rail-highway, semitrailer unit, which embodies dual service wheels, flanged for track and pneumatic for road. Dual axles are employed, it being possible to raise or lower both the rail and highway wheels, or they may be adjusted so that both sets of wheels may be used on the rails. A shock-proofed fifth wheel attachment is mounted on the rear frame to permit coupling of additional units. The trailers would be handled by their own motor unit, or coupled to the rear of a train on the rails. The proposed semitrailer would be 20 to 33 feet in length, weighing 4 to 5 tons and have a weight capacity of 11 to 13 tons. The estimated cost is $1,200 to $2,000, depending on the load capacity.

W. J. Laffey submitted a patented design for a convertible truck wheel, for use on both highway and railway. He has also patented a truck deck which is adjustable to variable heights. Details of the inventions were not submitted.

Albert W. Gustafson has patented a combination auto-driven railway car and truck. The plan proposes that an auto truck, loaded on a flat car, and with rear axle suspended on jacks to clear the wheels from floor level, be employed to propel the railway car by means of two sprocket chains, engaging sprocket wheels fitted to the real wheels of the truck and two aligned sprockets on railway truck axle.

Courtney L. Moore is sponsoring for a client a 4-wheeled, patented trailer, equipped with axles that lock automatically on specially designed 4-wheel rail trucks, one truck under the front and one truck under the rear axle of the trailer. The rail trucks are equipped with continuous air brakes, provision is made for necessary safety appliances, and couplers are mounted on the trailer. The design contemplates that trailers would be handled as regular equipment in a rail train. A ramp straddling the rails would be provided for running the trailers onto and off the rail trucks.

Northrup, King and Company has designed a semirail car which operates as a semitrailer on highways. For rail operation it is transferred by means of a ramp to specially designed railway trucks, so that the vehicle becomes a miniature freight car, the underframe of the vehicle becoming the underframe of the car with columns on the railway trucks engaging bolsters on the semirail car. The car is equipped with an automatic coupler at one end, but there is no provision for continuous power brakes or for safety appliances.

J. H. Rathmell has devised a plan of providing a track of concrete or wooden construction parallel to present railway tracks, and immediately adjacent for the operation of highway vehicles.

The vehicle would be fitted with a steel flange on the outside of each wheel, immediately above the tire, which would contact a metal guide rail which would be a part of the proposed vehicle track.

Charles H. Tomlinson has designed a combination rail-highway vehicle to be operated on either highways or remodeled railroad tracks. The plan calls for wooden stringers or runways of concrete or asphaltum to be placed outside of and level with the top of rail and of a width that permits operation of vehicles equipped with dual pneumatic tires. A disc on each wheel which serves the purpose of a flange engages the gauge side of the rail and guides the vehicle when running on rails. When the vehicle is on the highway the disc is raised. A form of articulated train is suggested, but the plan may be used for coaches, tractors and semitrailers, or for truck and trailers.

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84. Weight of Transport Vehicles

Railway

The railways owned on December 31, 1932 approximately 2,100 thousand freight cars in addition to which there were over 250 thousand privately owned freight cars. Of this total number, approximately 44 percent were box cars with an average weight of 21.3 tons, and an average load capacity of 50 tons each; about 4 percent were flat cars with an average tare weight of 17 tons and an average load capacity of 56 tons each; about 4 percent were stock and poultry cars with an average weight of 19.5 tons and an average load capacity of about 45 tons each; about 37 percent were gondola and hopper cars with an average weight of 21.2 tons and an average load capacity of 66 tons each; about 5 percent were tank cars of which less than one tenth were owned by railways; about 6 percent were refrigerator cars of which approximately one sixth were owned by railways; having an average tare weight of 27.5 tons and an average load capacity of 38 tons each.*

The loaded car days aggregated about 341 thousand per day, or approximately 14 percent of the total car equipment.#

The average tare weight of the cars was 21.5 tons per car; the ratio of dead weight (cars and locomotives) to net tons was approximately two to one. The average load per car was 24 tons; excluding l.c.l. traffic, 34.5 tons.ø The average load of box cars was 25 tons; and of open top cars, 52 tons per car; tank car traffic, 30 tons per car; refrigerator cars, 13 tons per car; and stock cars, 11 tons per car.∤

The average number of loaded car miles per car per year was 4,300 miles; empty car miles per car per year 2,800.**

Characteristics of present railroad cars are shown in Analysis 84.1, and the average load carried by commodities and types of car appear in analyses 90.2 to 90.5, inclusive. In 1933, considering all cars, a ton of tare carried on the average 1.6 ton of lading. By types of cars there is a great variation. For box cars, one ton of tare carried 1/2 ton of payload; for refrigerator cars, 1 ton of tare carried 1/2 ton of payload; for stock cars, 1 ton of tare carried 3/5 ton of payload; for tank cars, 1 ton of tare carried 1 1/4 tons; while for open top cars 1 ton of tare carried 2 1/2 tons of payload.##

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* Analysis 84.1.

# Eighteen million carloads at 6 loaded days per car plus 9 million merchandise carloads at 1.77 loaded days per car, total 124 1/2 million loaded car days, or 341 thousand cars under load per day. Analyses 67.1 and 84.1.

ø Analyses 45.17 and 67.1. ∤ Analysis 90.2 et seq.

** Analysis 70.1. ## Analyses 84.1 and 90.2 et seq.

Considering movement of freight cars as well as load, the ratio of tare to payload is even more striking. Taking loaded haul only, for each net ton mile in 1932, the railroads produced a tare ton mile, while including empty haul they used 1 3/4 tare ton miles. If the locomotive and tender be included, the non-revenue ton miles amounted to 2 1/6 times the net ton miles.*

In reducing vehicle weights the present strength of cars must be retained until operating practice is changed. Unfortunately, long trains, yard and road switching, and inadequate couplers, draft gears, brakes and other parts with which many existing cars are equipped, require that new cars be able to stand the gaff in trains with present cars. Due to advances in the metallurgical art it is now practicable to use alloys and castings which combine increased strength with less weight and corrosion-resisting properties. The initial cost of cars constructed of such materials and using improved design will increase materially only when more than a 20 percent reduction in present car weight is sought. It is possible to construct a freight car equal in size and strength to present cars but weighing less than one half as much. Weight reduction for each type of car must be worked out on its merits. For example, in place of the present box car, consider a newly designed flat car 42 feet long to carry five containers each of 500 cu. ft. capacity and 12 1/2 tons load limit. Without the use of alloys, the flat car will weigh approximately 19 tons and the containers 9 tons, with a load limit of 62 1/2 tons, and average load of at least 45 tons. The ratio of maximum and average payload to tare is respectively 2 1/4 and 1 2/3 while for present box cars on the basis of 1933 carload traffic only, the ratios were 2 3/8 and 1 1/5. Using alloy materials, with only a moderate increase in cost the tare weight of car and containers can be reduced to 22 tons, producing ratios of 2 5/6 and 2, a gain of 75 percent in the average load compared to tare.# Incidentally, the weight-reducing materials used would result in a longer life with less maintenance expense.

Highway The rated capacity of a truck is merely a rough classification of the chassis capacity, minus average body allowance, under average conditions of grade and speed. Any departure from these conditions will alter the carrying capacity. An allowable gross load rating is also generally provided for the chassis, based on the structural safety of its members and working parts. When average body weights are subtracted, there results a marginal allowance for overloading beyond the rated capacity which decreases relatively as the vehicle increases in size. The rated capacity plus this overload may be termed the manufacturer's allowable load. It is the difference between the chassis and body weight, fully equipped, and the allowable gross load. It represents, in the case of a truck or tractor, the load that can be carried with safety.

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* Analysis 70.1. # Analyses 84.1 and 90.2 et seq.

It does not, however, represent the load that may be pulled with safety. The truck-trailer or tractor-trailer combination involves additional carrying capacity provided by the frame members, wheels and brakes of the trailer, which permits far greater loads to be carried by combinations than by single motive units of like rated capacity.

The trailer or semitrailer cannot, however, increase the capacity of the motive unit for performing work, and it must follow that the 2 1/2 ton tractor hauling the 5 ton semitrailer or the 2 1/2 ton truck hauling the 2 1/2 ton trailer must lose in speed and climbing ability some of the advantage it gains in carrying capacity.

From manufacturer's specification listings and average weight data of the last seven years the following generalizations appear:

$$\text{Manufacturer's allowable gross load, lbs.} = 21.22\ (\text{Rated Capacity, lbs.})^{0.765}$$

$$\text{Average vehicle weight, lbs.} = 36.58\ (\text{Rated Capacity, lbs.})^{0.628}$$

The difference between manufacturer's allowable gross load and the average vehicle weight represents the net allowable working load under average conditions. Should excellent conditions be present, however, for the particular haul, or should the speed be reduced, this margin may be materially increased, and in practice, as evidenced by the questionnaire replies on average loadings, it is increased considerably; though the average load carried throughout the entire annual mileage fell considerably below the manufacturer's allowance as witnessed by the average gross weight, which represented but 78.3 percent of the gross weight allowance, or,

$$\text{Average gross weight, lbs.} = 16.62\ (\text{Rated Capacity, lbs.})^{0.765}$$

85. Versatility of Freight Equipment

Railway Measured by results of the one-day test, the box car was the most versatile of railway cars. It handled 34 percent of the ton miles and a part of each of the 24 commodity groups.* Next in importance were the gondola and hopper cars, 40 percent; refrigerators, 14 percent; and tanks, 9 percent. The percentage of total carload car miles of the various classes of equipment were: Box 37 percent; refrigerator 25 percent; poultry and stock 5 percent; gondola and hopper 22 percent; tanks 8 percent; and flats 2 percent.*

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* Analysis 85.1.

A single type container can be built to carry efficiently all commodities except livestock, liquid bulk material, and articles of a size too large for carriage in a container. A large part of the latter class would be carried normally on flat cars, however, and so could be carried on container cars minus the containers. As to bulk liquids other than milk, they can be transported most economically and serviceably by rail in tank cars of far greater capacity than are now used, while packaged liquids load easily in containers. Milk is a commodity which, when carried in bulk, requires a special tank and unavoidable empty return haul. By mounting the tank on a standard container base, any container car and any highway chassis (truck or trailer) can be used to transport the milk, thereby confining the special equipment to a small part of the total transport equipment required, and attaining greater versatility in use of the railway and highway vehicles. What has been said concerning bulk milk applies also to other bulk liquids which move a portion of the journey in bulk lots smaller than railroad tank cars. Thus, for local distribution it is economical to move refined petroleum in relatively small tanks, which even though they never travel by rail should be mounted on standard container bases so that the highway vehicle could be used to haul other commodities. The remaining commodity is livestock, which it is not practicable to move in containers that would be used for other products. Here again, while empty return haul would be incurred on livestock conveyances, the expense would be held to a minimum by using livestock containers mounted on a standard base, which could be carried on any standard container car or highway vehicle chassis.

An analysis# of all commodity carloadings for the year 1933, showed that only two sizes of containers are necessary efficiently to move all commodities, both containers having a width and height of 8 feet, one being 10 feet 4 inches long and the other 24 feet long. The shorter body would be loaded transversely on a flat car and so would require one third of the space of the longer body. On a 42 foot car, five small containers or one large container with two small ones could be loaded. On a 50-foot car, six small containers, two large containers, or one large and three small containers could be loaded. Livestock bodies could be mounted on the 24-foot container base, which could also be used for an ordinary freight body (24 feet long) which would carry light, bulky freight as well as material too long or large for the small container. On the small container base could be mounted standard freight bodies, some of which would need to be insulated and equipped for heating and refrigerating. Tank bodies for milk and other bulk liquids would preferably be mounted on the small container base, as the total load carried via highway using a tank mounted on the long container base would exceed the allowable gross weight of many states.

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* Analysis 89.1.

# Analysis 90.2 et seq.

With the arrangement just outlined great versatility in equipment and its use would be obtained. Approximately 85 percent of all tonnage suitable for carriage in containers could be loaded in the small containers, while the special body containers would be held to a minimum.* All container cars, which are essentially flat cars, would move any kind of commodity, as would all highway tractors. Two lengths of highway semitrailers, would normally be used, for use respectively with the two sizes of containers, though where more economical both sizes of containers could be carried on a semitrailer designed for the 24 foot container. The rolling stock, both railway and highway, would have maximum utilization, the number of railroad cars would be materially reduced, while great versatility in the kinds of commodities carried per car would result.

Refrigeration of transport vehicles is now accomplished by the use of water ice, salt ice, solid carbon dioxide (dry ice), combination of solid carbon dioxide with brine or other materials, silica gel, anhydrous ammonia, propane and other gases. The first three substances cool by evaporation, the refrigerating materials being dissipated, while the remaining substances operate in closed systems without loss of the refrigerant but with a transfer of heat through alternate compression and expansion of chemicals. The heat transfer is accomplished by the aid of mechanical and electrical equipment or through chemical reactions.

None of these refrigerants can be considered as ideal in their application to transportation vehicles. Water ice is still the principal refrigerant used in railroad service, the other materials and methods having been developed in an attempt to eliminate the defects of water ice, some of which are as follows: Excessive weight and volume of space occupied; rapid dissipation with frequent renewals and accompanying large investment in icing stations and services; difficulty in rapid pre-cooling of vehicle bodies and lack of uniformity in temperature in different parts of the body; damage to vehicle body and lading with high maintenance expense; difficulty in obtaining low temperatures. The principal advantage of water ice is low first cost but a true comparison with other refrigerants can only be made by considering all elements of cost.

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* Analysis 90.2 et seq.

The closed system refrigerants which eliminate the expense of constant replacement of refrigerating material, nevertheless, require considerable equipment which adds dead weight and necessitates servicing and maintenance in order to operate properly. Of the closed system refrigerants, one which has no moving parts is to be preferred, particularly if the dead weight to be transported and space occupied by refrigerating mechanism inside the vehicle body is small. Inasmuch as the vehicle body must be demountable, for movement by rail, highway, or water, the closed system refrigerating mechanisms have a difficult situation to meet.

This leads to the consideration of refrigerants which must be replenished but which overcome many of the defects of water ice. Of the refrigerants now available for use in containers, dry ice appears to be the most suitable. It maintains a more even temperature over a longer period of time, occupying less space with less weight, and without damage to the vehicle body. With dry ice much lower temperatures can be maintained, bodies can be rapidly pre-cooled, and it appears to have a beneficial effect on some perishable products with a deleterious effect on none. These advantages all result in lower refrigerating costs due to increased amount of lading per container unit with greater payload per ton of tare, reduced maintenance expense of vehicles and bodies, less servicing of shipments during transportation movement, and improved condition of perishables shipped. The principal drawback to the use of dry ice is its relatively high first cost and the difficulty at present of obtaining it at many points throughout the United States. Improvements in methods of production of dry ice indicate that both of these disadvantages may be overcome in the near future.

86. Adaptness of Freight Vehicles

Railway

Analysis 40.1 tells the shipper's story of what tonnage is being forced to the highway because of railroad high carload minimums. The railroad classification committees are under constant pressure from shippers and industry in general to reduce the carload minimum on a great number of commodities. At the beginning of the twentieth century the average capacity of box cars was less than 25 tons and of all cars 28 tons. As late as 1920, over 80 per-cent of all box cars had capacities of 40 tons or less, the average being 37 tons. Today the average load-carrying capacity (not nominal or marked capacity) of all box cars is 50 tons, while for all cars it is 55 tons. The railroads are committed to large cars of great capacity, but the customer must ship in smaller than carload quantities. Trucks are meeting the need within the limits of distance that truck load shipments can be made economically. A solution to the problem lies in the use of containers, whereby the present large car chassis can be retained with economy and the shippers' needs met by loading three, four, five, or six containers to a car. Reference to the cubical space required for the average loads now moving by highway* indicates that containers will handle satisfactorily the present shipment. The small container, 10 feet 4 inches long, previously described, of 500 cu.ft. and 12 1/2 ton capacity, is seen to be satisfactory for all commodities except livestock, lumber, baled cotton, automobiles, department store merchandise and tobacco products. All of these commodities are well suited to the 24 foot container of 1,200 cu.ft. capacity, although some of them might be shipped just as well in two 500 cu.ft. containers. In most instances shippers using containers could move a somewhat larger average load than now moves by truck with but a small increase in the total transportation charge and an actual decrease in the charge per ton.

87. Dependability of Freight Vehicles

88. Accessibility of Freight Vehicles

Shipper

The shippers' cost of loading and unloading freight is shown in analysis 32.1. For all freight originated and terminated at team tracks, as well as all freight which receives unnecessary handling, this expense would be eliminated by the use of containers.

Railway

The cost of initial loading and final unloading can be materially reduced by providing a container which permits mechanical handling of materials. Wide doors on at least two of the four sides, roof hatches or a roof easily removable in one piece, discharge gates for spreading or chuting bulk material at point of delivery, all are necessary. For example, the 500 cu.ft. container should have doors at least six feet wide and high on two opposite sides; a horizontal hinged gate eight feet wide and two feet or more high at each end with a small door in the middle of the gate to permit chuting of materials, and probably additional large doors above the hinged end gates; and an easily opened water-tight hatch at least two feet square in the roof. The 24-foot container should have a door at least six feet wide and high on each side and end, two or more roof hatches, and the whole roof should be readily removable in one piece. The inside walls of all containers should be smooth, plane surfaces, and the floor should be a single, unbroken plane. Given such containers to load or unload, shippers can effectively use various sorts of material handling equipment to perform the work quickly and at low cost.

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* Analysis 38.1.

89. Mobility of Freight Vehicles

Shipper

The additional expense incurred by off-track shippers due to drayage of freight is shown in analysis 24.8. Likewise, the saving in drayage charges which is possible through the use of motorized terminal container service compared with present terminal truck service is shown in analysis 25.1.

Railway

The average freight carload averaged 63 miles per loaded car day over all, 119 miles while in the carrier's possession and 395 miles while in road trains. The most mobile classes of freight equipment were poultry and stock cars which averaged 193 loaded car miles per car day over all, 257 car miles while in carrier's possession and 487 miles in road trains. A close second was the refrigerator car which averaged 166 miles per loaded car day over all, 247 miles while in carrier's possession and 493 miles in road trains. The most sluggish cars were hoppers, 30 miles per day over all, 65 miles in carrier's possession and 291 miles in road trains. Box cars (c.l.) averaged 66 miles over all, 115 miles per loaded car day in carrier's possession and 390 miles in road trains. L.c.l. box cars were some faster, 105 miles over all 133 miles in carrier's possession and 441 miles while in road trains.

The average carload required 34 hours to load or unload; the average l.c.l. car loaded in 6 hours and unloaded in 3 hours. Of the carload cars, poultry and stock were loaded or unloaded in an average of 6 hours; refrigerators were loaded in an average of 15 1/2 hours and unloaded in an average of 28 hours; gondolas required 45 hours to load and 34 hours to unload; hoppers, 48 hours to load and 43 hours to unload; tanks, 29 hours to load and 60 hours to unload; flat cars, 24 hours to load and 29 hours to unload. The average haul of all carload cars was 376 miles; of l.c.l. cars, 199 miles. The longest average carload haul was found in refrigerators, 1,169 miles. The next were box cars, 426 miles. The shortest carload haul was in flat cars - 179 miles.*

90. Utility of Freight Vehicles

Highway

Load factor data were tested by an application of the percentage difference between the vehicle weights and the reported average gross weights. The curve takes the downward trend because it is in terms of rated capacity which approaches the manufacturer's allowance as the vehicle increases in size. In terms of the manufacturer's allowance, however, it continues upward.

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* Analysis 89.1.

Annual mileage varied between for-hire and private operators, the small delivery group of the latter considerably exceeding the average and the very largest group taking on the characteristics of the former. The curves were fitted according to the general method outlined. Weighted average coefficients were employed.

$$\text{Annual mileage, for-hire} = 546\ (\text{gross weight, lbs.})^{0.4}$$

$$\text{Annual mileage, private} = 386\ (\text{gross weight, lbs.})^{0.4}$$

91. Capacity of Freight Vehicles

Railway

The total serviceable cars owned by carriers in 1932 were 2 1/6 million, in addition to which there were approximately 250 thousand privately owned cars. The average time a car was under load, developed in a nationwide test on December 13, 1933, was 6 days, of which during a little more than 3 days it was in the carrier's possession and just under 3 days in the possession of the shipper or consignee. The ratio of empty to loaded car miles was about two thirds.* Hence the time required for the empty return would be about 2 days, and the time for the round trip of the car, 8 days. On the basis of 320 serviceable days, this would mean approximately 40 round trips per year per car, or a capacity of about 95 million cars having the characteristics of the 1932 average movement.# This is over three times the 1932 traffic and about 80 percent greater than the peak traffic of 1929.ø

The relative utilization, both weight and volume, of freight cars and containers, for each of the Commission's commodity groups, is shown in analyses 90.2 et seq. Both weight and volume capacity of cars, with respect to 156 commodity groups, were considered. All box cars loaded to 50 percent of both weight and volume capacity. Automobile box cars loaded to 82 percent of volume capacity and 11 percent of weight capacity. Refrigerator cars loaded to 51 percent of volume capacity and 35 percent of weight capacity, while open top cars loaded to 88 percent of volume capacity and 79 percent of weight capacity. All cars loaded to 57 percent of volume capacity and 63 percent of weight capacity. Taking only the best loading, either weight or volume, it was found that all box cars averaged 70 percent of capacity, refrigerator 54 percent, stock 96 percent, and open top 95 percent. The present average tenders of commodities could be loaded into containers of the two sizes described with a utilization approaching 100 percent of the capacity, volume or weight, whichever was the limiting factor. The substitution of containers for present car bodies would materially increase the average load carried.

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* Analysis 89.1.
# Analysis 67.1.
ø Analysis 3.1.

92. Modernization

Railways One of the heaviest expenditures which railway must make is maintenance of their cars. This cost in 1932 was 17 percent of their total operative costs. It amounted to $64 per train operated, 12 1/2 dollars per car originated, 52 cents per ton originated, 87 cents per train mile, and 33 mills per loaded car mile.* In 1932 the maintenance cost amounted to about $160 per car owned, about 60 percent of the 12-year average.# Of the total cost in 1932, 52 percent was expended for repairs and 48 percent represented depreciation and retirement charges.ø

Listed in the Official Railway Equipment Register, July, 1934, are more than 21,000 flat cars of 80,000 pound nominal capacity and more than 25,000 flat cars of 100,000 pound nominal capacity which are over 36'-0" long and less than 42'0" long. These 46,000 flat cars are suitable for carrying four 500 cu. ft. containers each. In addition there are some 2,700 flat cars of 80,000 pound nominal capacity and 10,000 flat cars of 100,000 pound nominal capacity over 42'-0" and less than 50'-0" long. These 12,700 flat cars would carry five 500 cu. ft. containers each. There are also more than 5,000 flat cars of 100,000 pound nominal capacity over 50'-0" long, each of which would carry six 500 cu. ft. containers. The total supply of flat cars suitable for use in container service thus exceeds 63,000. There are more than 77,000 flat cars owned by U. S. railroads.

Similarly there are about 21,000 mill gondola cars of 100,000 pound nominal capacity over 36'-0" long and less than 42'-0" long which would carry four 500 cu. ft. containers each. There are also over 24,000 mill gondolas of 100,000 pound nominal capacity and over 13,700 mill gondolas of 110,000 pound nominal capacity over 42'-0" long and less than 50'-0" long. These 37,700 cars would each carry five 500 cu. ft. containers. Thus there are over 58,000 mill gondolas which are suitable for container service, practically all of which are no longer suitable for the purpose for which they were built. The total number of mill gondolas exceeds 93,000.

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* Analysis 77.2. # Analyses 3.4 and 89.1.

ø Commission statistics, 1932: Car repairs, 120 million dollars; car depreciation and retirements, 112 million dollars.

The total supply of flat and mill gondola cars suitable for container service is at least 111,000. From 70,000 to 80,000 of these cars should be readily available for container service and could be reconditioned and put in first-class shape, including new deck, guide channels and stops for containers, selective draft gear, non-harmonic springs of coil-elliptic or other spring-dampening arrangement, at an estimated cost of $350 per car, or with "AB" brakes included the average cost would be $495 per car.

If additional cars are required for container service they could be drawn from the existing surplus stock of box cars, preferably of 100,000 pound nominal capacity, 40'-6" inside length type. Such a car with the superstructure removed does not have sufficient structural strength to safely carry five containers each weighing 28,500 pounds (including 25,000 pounds payload). While the car underframe could be strengthened by increasing the structural material in the side and end sills, it would be preferable to discard the present underframe and replace it with a modern cast-steel underframe designed for container service. With new underframe plus modern draft gear and spring dampeners, and "AB" brakes, but using present trucks, a car for container service should cost approximately $1,300 for the chassis and about $1,500 for each set of five containers. Such a chassis would be the equivalent of a new car of the most modern construction especially designed for container service which would cost approximately $1,600. Should the present box car underframe be retained, but remodeled to suit container loadings, with new deck, guide channels, container stops, modern draft gear, spring dampeners, and "AB" brakes, the estimated cost per car would be about $1,050 and the reconditioned car would not be the equivalent of a car with new underframe.

Waterway Maintenance of vessels by all reporting carriers involved an expenditure in 1932 of $18,000,000 which was 14 percent of total freight expenditures and 81 percent of total maintenance expenses. Common carriers spent $14,500,000 or 13 percent of total expenditures and 78 percent of maintenance expenses for vessel maintenance, while these figures for contract carriers were $2,000,000 or 15 percent and 96 percent, and for private carriers $1,500,000 or 19 percent and 97 percent.*

In the Atlantic Coast district, maintenance of vessels by common carriers amounted to $3,311,000 or 14 percent of total freight expenditures and 74 percent of maintenance expenses, and for other carriers the sum expended and similar percentages were $871,000 or 20 percent and 92 percent.*

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* Analysis 77.3.

In the Atlantic Gulf service, the figures for common carriers were $2,918,000 or 19 percent and 70 percent and for other carriers $224,000 or 22 percent and 100 percent.*

In the Intercoastal trade, common carriers spent for vessel maintenance $4,143,000 or 10 percent of total expenditures and 83 percent of maintenance expenses and other carriers in this trade spent $51,000 or 16 percent and 58 percent of total and maintenance expenses, respectively, for this purpose.*

On the Inland Waterways, similar figures for common carriers were $1,598,000 or 20 percent and 77 percent, and for other carriers $69,000 or 15 percent and 99 percent.*

On the Great Lakes, common carriers spent for vessel maintenance, in 1932, $1,210,000 or 15 percent of total freight expenses and 88 percent of total maintenance expenditures and other carriers on the Great Lakes spent for this purpose $2,240,000 or 15 percent and 99 percent respectively of total freight and maintenance expenditures.*

On the Pacific Coast, similar figures were for common carriers $1,326,000 or 11 percent and 88 percent, and for other carriers $59,000 or 8 percent and 99 percent.*

Highway

Maintenance costs represent the cost of repairing and maintaining the vehicles. Other maintenance costs are charged to garage rent or general overhead. The curve was fitted by the adopted method and the coefficient used is the weighted average.

Maintenance costs, cents per mile =

$$0.016362\ (\text{gross weight, lbs.})^{0.53}$$

No trend was indicated for maintenance labor as between vehicles of different sizes in terms of cents per mile. The weighted average cost for all vehicles was 1.1567 cents per mile. It was applied and the differential between it and maintenance costs was taken as maintenance materials.

Garage miscellaneous includes those transportation expenses connected with the servicing of the vehicles but not directly allocable to any particular account. Washing, greasing, tire-inflation, radiator filling, etc., are representative. A mean coefficient resulting from the 6 group averages was used.

Garage miscellaneous, dollars per year =

$$2.89\ (\text{gross weight, lbs.})^{0.4}$$

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* Analysis 77.3.

This results in an exact equivalent of 0.7225 cents per mile for all vehicles. The labor element in this expense showed no trend but a weighted average for the gross expenditure in the sample indicated that 68.50 percent of this miscellaneous expense represented labor. These figures were used.

Vehicle depreciation was almost invariably charged by the operators responding, and in a considerably higher amount than is theoretically necessary. It is generally, though not always, charged on a mileage basis. The society of Automotive Engineers considers it a fixed expense. If mileage were consistently uniform as between different vehicles and between different operations, and if maintenance practices were similar, a recommended method of depreciation on a time basis or a mileage basis might be advisable. Lacking such uniformity, however, the method by which depreciation reserves on vehicles are set up must remain a choice for the individual operator. This investigation regards depreciation as a mileage charge. The mean coefficient was used.

Vehicle depreciation, cents per mile =

$$0.022334\ (\text{gross weight, lbs.})^{0.5}$$

The increase is therefore according to the square root of the load. Dividing it into vehicle price results in mileage life, which divided by annual mileage gives the life in terms of years. The resulting figures are wholly normal.

The excess charge by the operator is indicated by the fact that the average life of all trucks registered is approximately 9 years.

XXV CONDUCTING TRANSPORTATION

93. Conduct of Freight Transportation

Railway

The general group of primary expense accounts now called "transportation expense" were formerly called "conducting transportation" - a title which more nearly describes their nature. These accounts cover the expense involved in field operations as distinct from maintenance upon the one hand, and overhead expense upon the other. In 1932 they aggregated 809 million dollars, which was 31 percent of revenues and 41 percent of costs.* They may be classified further in the expense of operating stations "agency expense", of operating yard trains, including supplies, of water transfer, and of road train movements, including supplies.

94. Operation of Freight Stations

Station

Expense of operating stations in the United States in 1932 amounted to 155 million dollars, or 6.1 percent of the revenues and 7.9 percent of total costs. Expressed as a unit cost, it amounted to $5.72 per car originated and $5.68 per terminal car. The cost is one largely chargeable to l.c.l. traffic.*

Because of difference in kinds and sizes of terminal and station facilities, their location with reference one to the other, the class and volume of business handled and the time and manner of arrival and departure of traffic, each terminal or station is a separate and distinct problem, and changing within itself with the ebb and flow of traffic. Standardization of operation is therefore impractical and this report deals in a general way only with what, from the responses made by the many railroads, are, in the judgment of the writer, progressive station methods of recent origin and susceptible of extensive application or those suggested that may be advanced steps.#

Billing. Speed, accuracy and efficiency of station operation would be promoted by uniformity of arrangement of written matter on bill of lading, waybill, freight (expense) bill, and prepay bill and the completed transportation service advanced by the elimination of duplication in the preparation of these documents as far as such action is practicable.

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* Analysis 93.2.

# This and succeeding paragraphs about Railway Station Service constitute the report of Mr. F. J. Ginn.

Railroad transportation is based on a contract between shipper and carrier called a bill of lading, the terms and general form of which are prescribed by the Interstate Commerce Commission, the contract, in triplicate, usually being prepared by the shipper. Actual transportation is conducted on a form known as Freight Waybill, the makeup of which is authorized by the Railway Accounting Officers Association, and made mandatory in interline service, the issue now in use being the outcome of years of experience in meeting needs incident to movement from point of origin to destination, collection of charges and accounting.

The matter written or typed by the shipper on the bill of lading is copied in full to the carrier's freight waybill. It would, therefore, seem desirable that the forms be as nearly identical as practicable so the transcribing which is usually done hurriedly and frequently under the most unfavorable circumstances might be accomplished with a maximum of speed and minimum of opportunity for omission or error. As the form of the waybill is dictated by transportation requirements and there is no urgent demand for maintenance of the exact makeup of the present uniform bill of lading, the bill of lading, memorandum copy, and shipping order might properly be aligned with the Mandatory Freight Waybill in present or revised form, any change to be effective with individual shippers only as their stock of forms is exhausted.

With trucks going into plants at all hours of the day and night in competition for both carload and less than carload traffic, it is a matter of prime importance that the service of the railroads be made as convenient to users as that of their truck competitors and that the lowest consistent time in transit be afforded. The location of the shipper's place of business with reference to carrier's station and yard frequently compels the public to maintain messenger service or resort to other inconvenient or expensive methods of handling the bill of lading to the railroad as compared with the trucking company picking it up at his place of business, railroad transportation usually beginning only after the waybill reaches the forwarding yard.

This situation has been met in the packing and a limited number of other industries with a combined bill of lading and waybill made at one writing, which practice would seem possible of general use if the uniform bill of lading and mandatory freight waybill were aligned to register properly. A combined bill of lading-waybill form carrying parts to be sent to the yard with the car, on which transportation and delivery might be accomplished while the bill of lading was moving to the station, and billing and accounting incident to its forwarding were being done would aid, and designated convenient points such as city offices, yards, etc., at which the public could deliver the bill of lading would add to satisfaction. In major areas the making of such offices joint and the distribution of the bills of lading to the respective roads by joint messenger service would seem proper.

The written matter on the freight waybill must be transcribed in full to the freight (expense) bill. Speed, accuracy and the prevention of omissions in this work would seem to warrant reconciling these forms and making both at one writing, in mandatory form. This practice, known as manibilling, is now in use in varying form on a number of roads in the handling of local business and has, in experimental use, been found to be practical on interline traffic, copies of some of the forms being attached to individual reports of carriers.

The collection of prepaid charges from credit patrons is usually on a copy of the waybill. These prepaid bill forms should be lined up to register with the mandatory freight waybill and be made at the same writing, the practice now being in effect on a number of roads.

Freight waybilling of traffic is usually done at point of origin, but with adoption of zone rating and accounting it has in many instances been found efficient and economical to transfer this work to Zone Bureaus, to Operating organizations in close proximity thereto, or to separate ones centrally located.

Conclusions. That straight bill of lading, freight (expense) bill and prepay bill be revised to register with Railway Accounting Officers mandatory freight waybill and the forms prepared by shipper and carrier in such combinations as will afford the best transportation service.

Rating. The application of rates and extension of revenues by the forwarding agent and their verification by the terminating agent constitute a duplication of effort that tends to delay the movement and delivery of traffic, and audit office revision, at a later date and after payment, results in undercharges and overcharges which annoy the public and increase the expense to the carrier.

After the bill of lading is signed for a carload or less than carload shipment the usual procedure at originating station is to send the shipping order to the rate clerk, to the computer, to the waybill clerk, and to the reviser. At destination the waybill goes to the rate clerk, to the computer, to the freight (expense) bill clerk, and to the reviser and in the General Office at a later date a revising clerk and a computer again check the billing. This procedure slows down the process. is expensive, and has a tendency to entrust the accuracy of the transaction to the next fellow. In the early days of railroad transportation, the terminating road-haul carrier and its destination Agent were held responsible for the correctness of the rate used and charges collected and the passing through to destination of errors of commission and omission was common, station accounts being flooded with disputed and uncollectible bills.

The adage, "A task well begun is half done", applies nowhere with greater truth than in the transportation field and recently efforts are being made at point of origin where tariffs are legally required to be filed, to insure that the shipment begins its journey properly routed, rated, revenued and waybilled so a splendid transportation movement may not be ruined by an undercharge or overcharge bill.

Rate work under this most progressive method is handled as follows: Bureaus, branches of the General Accounting Department are established at large or pivotal stations with adequate and efficient force and supervision, complete tariff file covering traffic moving from, to or through the station, calculating machine, charts, etc. When bills of lading are signed, the shipping orders are sent direct to these Bureaus where they are rated, and extended and passed to station forces for waybilling. The waybill and shipping order are turned back to the Bureau, checked for correctness and Accounting Department authority stamped on the waybill, after which it is subject to no further revision excepting test checking in the General Office. Inbound waybills not bearing audit stamp are turned over to the Bureau and revised as to rates and extensions before freight waybills are made. Waybills covering l.c.l. merchandise in cars in the warehouse for transfer not audit stamped are sent to the Bureau for revision, are audit stamped and require no further attention. Under this arrangement a percentage of audit authority before presentation as great as 85 percent is attained on one railroad.

Outlying stations are assigned to the Bureau most advantageously located based on train schedules, etc., to Bureaus, and copies of forwarded and received waybills dispatched to the Bureaus by first train after the close of the days business. Waybills not bearing audit stamp are revised promptly and changes immediately given to the Agent effected by telephone, wire or mail, balance due or refund notices following by mail. This procedure in most cases enables Agents to correct prepaid freight bill or destination freight (expense) bill before charges are paid.

Special forms are used to secure additional data necessary in connection with descriptions, weights, etc., and to notify agents responsible for errors, primarily for the purpose of preventing recurrence.

Under this plan of operation, by which only audited bills are placed in the hands of the public, balance due and refund bills are practically eliminated, one carrier reporting 99.96 percent accuracy and another adjustment after settlement averaging 1 for each 2,000 bills handled. On the latter line three large patrons whose freight payments in 1934 aggregated $1,611,777 advise that reaudit by outside rate audit bureaus develops but a single item of $4.00, the correctness of which has not yet been developed.

Because of the close relationship of rating and billing and the passing and repassing between Operating and Accounting Departments at Bureau stations it would seem both efficient and economical to transfer waybilling and freight (expense) billing at those points to the Accounting Department.

Conclusions. (a) That Rate and Revision Bureaus operated by the Accounting Department be established at principal and pivotal freight stations, transfers, and yards; on originating traffic applying rates and extending revenues; on received traffic revising rates and revenues in advance of freight (expense) billing; and on passing traffic revising rates and revenue while cars are at station.

(b) That the making of waybills and freight (expense) bills at such points be taken over by the Accounting Department to avoid loss of time and confusion incident to passing and repassing between departments.

Accounting. Station accounting work creates a substantial part of station expense and is in part duplication of data maintained in some form in the General Offices of the Company and is the work in the station that is first subject to delay when station forces are disrupted due to illness, vacation, promotion, demotion, or other causes.

Station accounting, formerly a considerable part of station work, included the writing of book records of freight received and forwarded, making monthly reports thereof, writing record of cash collections, posting collections against received and forwarded books, following up items standing open on the abstracts, making monthly balance sheets and list of uncollected, this procedure being changed slightly some years ago by the inauguration of a system under which the book records and monthly reports of freight received and forwarded were replaced with daily abstracts. Regardless of the mass of data prepared in the station, there was considerable duplication of work and data in the General Office.

With the advent of machine accounting, it was found practical to transfer much of this work from the station to the General Office and with the introduction of the 80 place machine card in 1930 to transfer the remainder, eliminating duplication between stations and General Office, and in instances performing station and General Office accounting at one operation.

Under the changed methods on a number of carriers, stations make bills for transportation, collect them and remit the money, all other features of station accounting being taken care of by the General Office. Corrections are cut out, correspondence reduced to a minimum, safer accounting conditions produced and the time of the Agent made available for solicitation and other valuable station functions.

Conclusions. That station accounting work other than the making and collecting of bills and remitting of funds be taken over by the Accounting Department, and the making of abstracts, register of uncollected, cash sheets, miscellaneous collection, switching, earnings, the policing of collections, the disposition of disputed items not collectible at the station, and the preparation of statement of uncollected bills and monthly balance sheet be transferred to Central or General Offices.

Master stations. The maintenance of sub and suburban stations in cities and at short distances in rural districts with a full complement of tariffs and clerical forces is not required by the public or justified by present day conditions.

When transportation of people and of property was slow and expensive and communication restricted, proper service to the public required the establishment of stations only a few miles apart. With the advent of hard roads and motor vehicles and the general use of the telephone, reasonable distances are no longer obstacles. Adding to these store door pick-up and delivery and the use of highways for station-to-station business now being inaugurated and extended by the railroads, the demand for station service at many of these points has fallen off or ceased to exist and their status might be changed to receiving and delivering platforms or abolished entirely.

Conclusions. That central or master stations be designated for the purpose of maintaining complete tariff files concentrating the assembling, running, unloading and distributing of l.c.l. merchandise freight and handling the rating, billing, expensing, collecting, and other office work, thereby reducing tariff expense, eliminating package car runs, increasing average carloading and promoting efficiency and economy both in office and warehouse operation.

Collections. The collection of railway transportation charges in strict conformity with regulations is an obligation imposed on carriers. Differences in interpretation of instructions on the part of employees of carriers, the attitude of patrons, and liberal practices of competing forms of transportation make uniform compliance of individual carriers and of stations difficult, if not impracticable.

The collection of transportation charges is among the important as well as the difficult duties of an Agent, the situation being complicated by lack of prompt and accurate knowledge of placement of switched cars, differences in the rules and regulation of the carriers and in the interpretation thereof, the tendency of some patrons to obtain undue advantage by playing one carrier against another and the desire of Agents to aid patrons of known responsibility.

In an effort to control the situation in populous areas joint collection agencies have been formed by the railroads at a number of points under what is known as the "Kansas City Plan", the joint agency collecting all transportation charges, lifting shippers' order bills of lading, advise orders, grain elevator weight certificates, and handling and apportioning among interested carriers, as needed, bonds filed as guarantee against delayed and lost bills of lading.

At less important points, Treasurers of carriers interested have sponsored organization of Agents' Associations under what is known as the "Detroit Plan" to police collections.

Conclusions. (a) That in metropolitan areas joint agencies be created to handle for all railways under uniform rules on what is known as the "Kansas City Plan", the collection of transportation charges, the lifting of "Order Notify" bills of lading, of "Advise" orders, of weight certificates on cars on which outturn weights govern, and the distribution between carriers as needed of bonds filed by patrons as guarantee against delayed and lost bills of lading.

(b) In smaller cities and towns served by two or more carriers, local agents be organized to supervise the same elements of station service under what is known as the "Detroit Plan".

(c) In joint agencies other than regularly established Collection Bureaus the rules of the railroad operating the station govern the collection of transportation charges on all lines party to the joint agency.

Joint Station Funds. Lack of proper facilities, difficulty in or impossibility of keeping change and the practice of patrons in making a single check covering bills of two or more of the parties to joint station make difficult if not impossible the handling separately of the funds of any one company.

At stations joint between carriers or with Pullman, Western Union, Railway Express Agency, and others, the handling of funds is complicated by lack of facilities for keeping monies separate, by patrons including in a single check amounts due more than one Company, and by difficulty in obtaining change, necessitating transfer of cash from one account to another, resulting in discrepancies in the cash of individual railroads.

On some carriers all receipts, excepting Other Carrier and Railway Express Agency, are remitted daily to the Treasury of the Railway operating the station, remittances of those tenants being made as required by their rules through station draft of the joint Agent on the Treasury of the operating railway, Other Carrier and Railway Express Agency funds being handled in the usual way.

In the operation of joint Collection Bureaus, shippers and receivers are authorized to make a single check in favor of the Manager covering a day's business of all carriers. The adoption of such a rule at joint stations would add greatly to public convenience and if the funds of other carriers and Railway Express Agency were remitted to the operating railroad with those above referred to and distributed by station draft, greatly improved operation would result.

Conclusions. That all of the funds of a joint station be kept together and remitted to the Treasurer of the operating railway, under its rules and regulations, and a tenant lines collections remitted to it, as required in its rules, by station draft of the joint Agent, patrons being allowed to make a single check, payable to the joint Agent, for a day's business of all Companies party to the agency.

In event train service, location, or other cause makes the Treasury of a tenant line more acceptable as the joint depository, it should be used.

Warehouse Facilities. The extent of existing station facilities and their location with reference to business districts is not justified by present day business requirements, the volume of l.c.l. merchandise moving, the expansion of collection and delivery service and the use of highways for merchandise movement.

On account of the slow and expensive movement of animal drawn vehicles in earlier days, and for that reason to minimize drayage distance, freight stations were, as a general thing, located as near the business section of cities as possible, with yards in close proximity. Development of surrounding property with increased real estate values prevented expansion, and restrictions in movements of trains and vehicles over busy streets forced the removal of yards to outlying locations, greatly increasing the distance between yard and station and the time required to serve the house. Old industries desiring to enlarge and new enterprises seeking sites were faced with this condition, leading them to locate in suburban territory.

Continuing growth of business in many instances made necessary the building of separate inbound, outbound, transfer and suburban freight stations but relocation of industries coupled with the recession in general business during the past few years and the further loss due to truck competition, present locations are in many instances unsatisfactory and the extent of the facilities in excess of present or probable future needs.

Conclusions. That existing inbound, outbound and transfer stations be consolidated, and where practical new stations with necessary team tracks be located adjacent to main receiving and forwarding yards on hard surface roads with good approaches thereto.

Four-Wheel Trailers The time value to the public of motor equipment generally used in handling l.c.l. merchandise is greater than horse-drawn vehicles and there is, therefore, an increasing responsibility on the part of the railroad to release it promptly.

Freight station operation is greatly improved and ability to handle morning and evening peaks of traffic benefited by the receipt and delivery of l.c.l. merchandise on four-wheel trailers and where volume and distance warrant and arrangement of facilities permit, handling the trailers with electric or gas tractors. Live and dead skids, removable bodies and truck racks are useful under some conditions.

Spotting inbound loads with due regard to the freight in cars, leaving undisturbed, if properly stowed, transfer freight en route to distribution point; cars made empty used for reloading; cars loaded as near as practical in train run order; close observation of unnecessary merchandise cars by consolidation of package car runs are desirable.

At points where two or more stations are maintained, and the volume of business warrants, trailers "ferried" between stations in cars of special arrangement to eliminate rehandling and to avoid running duplicate inbound and outbound package car schedules have been found efficient and economical.

Conclusions. That four-wheel trailers be used in acceptance from and delivery to the public of l.c.l. merchandise freight and in "ferrying" shipments so loaded between main, sub and transfer stations, electric or gas tractors being used to handle them where volume and operating conditions warrant.

Opening-Closing Time. Carriers are not obtaining full benefit of the high speed train service being accorded l.c.l. merchandise due in part to commercial practices and in part to failures of their own.

Under normal practices the public accept inbound shipments from carriers in the forenoon, using the articles to complete consignments, and deliver outbound traffic to carriers in the afternoon, usually at the latest moment possible. Studies which have been made from time to time show that a considerable percentage of l.c.l. merchandise traffic handled in high speed trains at heavy expense is delayed in delivery to consignee due in part to carrier failure to unload early and in part to commercial practices.

In an effort to improve this condition and to meet truck competition some carriers are bringing on forces as early as midnight keeping open until 10:00 P.M., but even this will not solve the difficulty without C&D contractors and public drayage companies doing their full duty in making deliveries and consignees giving better service when their own vehicles are used.

Conclusions. (a) That carriers place arriving merchandise as early as practicable, starting necessary unloading gangs and inward office force at such hours as will complete unloading of available cars and have shipments ready for delivery at the established hour of opening for business.

(b) Studies be made at important stations from time to time to determine deliveries made on day of unloading by the several classes of delivery service, C&D and contract drayage percentages to be based on actual deliveries to patrons.

(c) Receivers be urged to accord traffic arriving by rail equality of treatment with that handled by highway traffic.

Three-Man Gangs. Rigid warehouse gang formation is not practicable, the large unit not being uniformly efficient. Warehouse operation is conducted under "gang" formation, the number of men constituting a unit fluctuating with the size of the house and the volume and kind of traffic handled, a clerk, a loader, two truckers and a stevedore, a total of five, being generally considered a gang. Observation of the operation of such units shows there is slack in each division due to the difference in length of haul, congestion, varying speeds of the different men in the gang, etc. Experiments made with gangs of fewer men and with changed working methods under which the clerk when waiting loads trucks and the truckers stow freight have generally produced increased man hour efficiency and lower costs.

Conclusions. That in the handling of freight with two-wheel trucks, the so called "drop truck" system be used and a clerk and two truckers, a total of three men, be deemed the gang unit, with the clerk loading trucks and the truckers trucking and stowing freight, this formation to be deviated from only in specific cases when made necessary by the character of freight handled or other conditions in the judgment of the Foreman warranting.

Study Improved Methods. With highway vehicles backing up to shipper's door and in many instances accepting and delivering shipments at a number of points within the plant, it is essential that the greatest possible ease and convenience be afforded the public in their interchange of business with carriers at freight stations.

Design of office and warehouse facilities, methods of operation and the equipment used have a marked bearing on the satisfaction of the public with the service afforded by the railroads. Warehouse door levels should correspond with the height of the major number of vehicles, an adequate and competent force be maintained, doors should be kept open the full established period, special arrangements made for delayed vehicles and emergency shipments, assistance given in the handling of heavy or unwieldy articles and as far as practical outbound l.c.l. merchandise shipments be accepted from and inbound shipments delivered to the public on four-wheel trailers or other mobile devices, saving time and rehandling. Cashiers' offices should be located in close proximity to the warehouse.

Conclusions. That constant study be made by individual carriers to improve station facilities and methods, keeping them in line with or in advance of those of competing forms of transportation, reporting to American Association of Railroads for the benefit of carriers generally new ideas and practices found efficient and economical.

Universal Stations. The use of freight stations for the individual business of a carrier in cities of importance is not justified by present day conditions.

The popularity of rail transportation is adversely affected by the general rule of individual railroad freight stations, compelling the public to peddle to as many stations as there are shipments for different roads. By merging operations, by arrangements worked out by two or more carriers for accepting freight for any one of them, by terminal stations and by universal stations both on and off line, this situation has been improved but there is still opportunity for advancement.

Conclusions. That railroads cooperate to provide a maximum number of points at which patrons may receive and deliver their shipments.

Motor Trucks vs. Cars. Trap or ferry cars are efficient only in rare instances and economical only when heavily loaded.

Trap or ferry cars were in almost universal use for many years for the interchange of transfer freight between carriers at junctions and for the movement under tariff provisions of l.c.l. merchandise traffic between stations and industries. The service is slow, usually requiring not less than 24 hours and when all the elements are considered is expensive. The use of motor vehicles by carriers in collection and delivery service has been in instances extended to the transfer traffic, the arrangement saving from 24 to as high as 72 hours and being found economical as well.

Conclusions. (a) That l.c.l. merchandise transferred between stations of the railroads at junction be generally handled with highway vehicles.

(b) That single minimum weight be established on trap cars moving between industry and railroad containing traffic for two or more roads party to a joint station, such arrangement to be authorized by joint or agency tariff.

(c) That trap car traffic moved in either direction between stations and industries be handled, under tariff provision, at the option of the carrier either in trap car or with highway vehicle.

Unrestricted C&D Service. Public requirements cannot be satisfied with a l.c.l. merchandise service any less complete, rapid and economical than that now being furnished by trucks.

The loss of l.c.l. merchandise traffic to highway vehicles which the railroads have suffered in the last few years, the extent to which store-door pick-up and delivery service is used in the older countries abroad, and the reception given to such service when inaugurated by the railroads in this country are reasonable proof of the desire of the public for a completed transportation service, which the railroads are in position to give through a combination of rail, highway and store-door service. Truck competition can best be met in this way and some such coordinated service should be provided or the field abandoned as far as possible.

Conclusions. (a) That free pick-up and delivery service coordinating rail and highway be established by the Railways on l.c.l. merchandise at not higher than minimum station-to-station rates, without restriction as to size, weight, or distance handled.

(b) That tariff provisions require prepayment in full of transportation charges on all traffic moving at less carload rates.

Highways vs. Way Freight. Way freight service does not now and cannot be made to satisfactorily meet public requirements created by truck competition.

The slowest and probably one of the most expensive services which the railroads perform is the distribution of l.c.l. merchandise traffic by way or local freight, the run usually requiring a day, often beginning or ending in the night and recently because of decreased traffic operating only on tri-weekly or semiweekly schedules. Interference of other traffic makes the movement of the train irregular and the service to the public anything but satisfactory and the loss of traffic to trucks is in large part at least attributable to the service.

Conclusions. That where hard surfaced highways parallel railroads, l.c.l. merchandise originating at or destined to small outlying stations be handled by motor vehicles to and from concentrating and distributing stations.

Simplification of Packing Requirements, Classifications and Tariffs. Classifications and rate sheets should be so compiled that the public may use railway transportation without being penalized.

Under the law the user of railway transportation is held responsible for the payment of proper tariff charges and any deficiency in the amount paid must be made good by him regardless of the circumstances surrounding the quotation and use of the rate, or that it may absorb many times over the profit in the transaction. In no other line of business is there such burden placed on the customer, hence there is a heavy moral obligation upon the Railways to so compile classification and tariffs that the ordinary business man need make no mistake in their use.

Conclusions. (a) That the three territorial ratings now carried in the Consolidated Freight Classification be reduced to one, same to apply on both interstate and intrastate traffic, the number of classes on l.c.l. merchandise be reduced and the description of articles simplified.

(b) Packing requirements and tariffs be simplified and class and l.c.l. commodity rates amended so there will be no necessity for alternate application.

Tariff Filing Requirements. The requirements of the Interstate Commerce Commission in connection with the filing of tariffs at small and at joint stations are out of line with present day commercial and railway needs, causing unnecessary expense for tariffs, and work in handling them.

Where Central Rate Bureaus or Master Agencies have charge of rates and billing in terminals, districts or divisions, with telephone, telegraph and frequent mail service, and with General and Divisional traffic offices readily accessible to the public and to outlying agencies, present requirements as to tariff filing are unnecessarily burdensome, and may properly be amended.

Regulations make no distinction as to the filing of tariffs at joint stations and each road party to such an arrangement maintains complete sets of tariffs resulting in duplication of joint and agency issues with heavy expense for tariffs and for work in recording and handling them without any benefit whatever to the public.

Conclusions. (a) That regulations governing the filing of tariffs be amended to permit each carrier party to a joint agency to furnish only its own local tariffs, the railroad operating the station to supply without duplication the joint and agency tariffs necessary for the proper operation of the station, dividing the expense thereof on just and equitable basis.

(b) That the filing of tariffs at small stations, and stations under the jurisdiction of Rate Bureaus or Master Stations be left to the option of the railroad.

Station Cost-Production Reports. Proper control of the expenses of its stations requires that a railroad compile its operating statistics on a uniform basis at all points. For the benefit of comparison between stations of different railroads, the methods should be identical on all roads.

Comparison of system results between railroads should be made semiannually or oftener, based on percentage of expenses to revenues until a more satisfactory one can be devised.

With due regard to satisfactory service to the public one of the most important features of station operation is individual station results as reflected in unit cost and man hour output per bill made in office and per ton of freight handled in warehouse, and the carrier's system cost for such service expressed as a percentage of revenues.

Comparison of operating results among stations of a carrier or between stations of different carriers, or between railroad systems is on the above basis, which is the best yet devised for measuring their efficiency. It is, therefore, highly important that the information on which the figures are based be compiled accurately and as far as practical on a uniform basis.

Reasonable control of station expenses compel Agents and Warehouse Foremen to have before them constantly the volume and unit results this day and to date with comparison with previous year's figures, and this day's figures must be available at the earliest possible moment.

The maintaining of records within the station cannot be depended upon to assure the attention which expenses justify and detailed daily reports covering office and warehouse operation of principal stations should be made and forwarded to supervisory officers.

Conclusions. (a) That records be maintained at important stations showing separately the office and warehouse, and by principal classes of employees, man hours, wages, overtime, unit cost, man hour production for the day and accumulated to date for the month, with comparison against the previous year and daily report thereof initialled personally by the Agent and Warehouse Foreman be sent daily to the Superintendent and Station Supervisory Officers.

(b) That railroads formulate and adopt generally a uniform basis of compiling station and system station operating results.

Simplifying Demurrage Records. There is extensive duplication of effort in recording and reporting cars for demurrage purposes.

Railroads generally require Agents reporting directly or through established demurrage bureaus to render daily, weekly, or semimonthly reports listing all cars placed for loading or unloading, showing name of shipper or receiver, car initial and number, time and date of arrival, placement, release, and mailing of notice, whether demurrage charges accrue or not. Similar information is retained at stations in book record and is subject to inspection by railway or bureau representatives.

Conclusions: That as far as practical demurrage records and reports be made at one writing with carbon and where this cannot be done that only cars on which demurrage accrues be transcribed to reports made by Agents.

Combined Switching-Reclaim Reports. The making of separate statements showing car initial, number, etc., causes unnecessary work in preparing and checking terminal per diem reclaims.

At nearly all junction points terminal per diem reclaims are prepared by agent of road entitled to the reclaim and checked by agent of road-haul carrier.

All cars subject to a terminal per diem reclaim are carried on interline switching statements or abstracts and at some few junction points the interline switching statements are used as basis for settling terminal reclaims. The agent of road delivering cars in interchange prepares summary in quadruplicate showing switching statement sheet numbers and the number of cars on each subject to terminal per diem reclaim by both delivering and receiving carriers.

Conclusions. That interline switching statements be used as basis for settling terminal per diem reclaims and that agent of road delivering cars in interchange prepare summary showing number of cars on which each line is entitled to reclaim furnishing receiving line with necessary copies.

Milling in Transit. The shipping public is entitled to the most convenient method of settlement that can be afforded consistent with good accounting.

Dividing rates at transit point causes unnecessary adjustments with transit operators and extra work on account of errors made in dividing rates.

There are a number of methods employed in billing commodities that have been granted transit privileges. The necessity for collecting charges on movement into transit points, and dividing revenue so that each participating carrier may receive its proper proportion causes adjustments by corrections on billing through interline settlement or claim channels.

These difficulties are increased when rates are divided and corrections issued at stations where fully experienced rate clerks are not employed or a full line of division sheets not available and to require payment on basis of combination of rates in and out of transit point places an undue burden on customers.

Conclusions. That transited traffic be billed from transit point to destination at balance of through rate, tariffs, where necessary, being changed accordingly.

Abolishment of TBA Pro Bills. A considerable part of the value of through interline billing is lost because of the extensive recording and reporting methods used at junctions.

Through interline waybilling is economical, and expedites traffic through junctions but it creates at each junction operating and traffic problems which are usually met by making through bill pros commonly known as TBAs which are copies of the waybill. These pros are used for obtaining receipts from draymen and connecting line, and for accounting and traffic purposes.

Conclusions. (a) That an abstract in manifold be made of such bills and TBA pros discontinued, receipt and record of exceptions to be noted on the abstract. If l.c.l. shipments are moved by vehicle, copy of the abstract to be used in support of drayage charges.

(b) That Railway Accounting Officers' Association require interline waybills to be printed by all carriers with such number of additional parts as are necessary to meet the need at junctions on traffic moving over the average number of roads.

Employees Examinations. The duties and responsibilities of large freight stations are so diversified and their dealings with departments and individuals both of the public and of the railway itself so extensive that men of long service and careful training are essential to an efficient service.

For many years each railroad station was a separate seniority district, larger stations being further divided in departmental units covering the important branches of station work such as accounting, rating, etc. Employment usually began at the bottom, promotion being from the ranks and men working up as fast and as far as capacity warranted. Under this plan men not only knew the work of the station and were qualified for promotion but the employing officer was fully advised as to their fitness and ability. Due to alleged unjust or unfair working of the plan, as time passed, station seniority only prevailed, then terminal and at this time division rights often extending over a Superintendent's territory of several hundred miles are effective covering the several Departments.

Under present conditions employees bid from one station to another or switch between departments or branches in a terminal and employing officers are frequently without adequate knowledge of capacity, necessitating assignment of unqualified men with resulting interruption to the carriers' service and penalizing public and carrier alike.

Conclusions. That railroads, after careful study of the kind and volume of work done at its stations, establish rank or grade for each station, and devise methods for examining in groups at stated periods employees seeking promotion to

Agents and other key station positions, awarding to successful applicants certificates showing grade of station and title of position to which eligible, applications for positions to carry the grade and number of this certificate, and award of position to be made to senior employee applying who holds proper certificate.

Improved Mechanical Messenger Service. Regular, frequent, dependable and economical station messenger service of reasonable capacity for the handling of waybills, freight bills, switching orders, car lists, etc., is necessary in the efficient operation of freight stations.

The efficient and economical operation of freight stations, due to more or less remote location of offices, warehouses, yards, etc., is frequently dependent upon messenger service required in the handling of shipping orders, waybills, lists of cars, etc., the service being performed by boys on foot or on bicycles, with automobiles or with pneumatic tubes. Service by messenger boy or by automobile is necessarily infrequent, not entirely dependable as to regularity, expensive, but has great flexibility as to routes traveled and packages carried. The pneumatic tube provides a frequent fast service of restricted capacity, is extremely expensive as to installation and operation, and is not entirely free from mechanical failures.

A messenger service more regular and frequent than boy or automobile but less expensive than pneumatic tubes is important to the proper operation of freight stations.

Conclusions. That Railways individually or jointly study the practicability of a light, flexible, mechanical carrier, preferably electrical, as substitute for messengers, automobiles and pneumatic tubes.

Waterway

Station expense of reporting water carriers amounted to $14,000,000 which was 11 percent of total freight expenditures and 18 percent of total transportation expenses. Common carriers spent for station operations $12,783,000 or 12 percent and 20 percent, respectively, of total freight and total transportation expenditures, for contract carriers similar figures were $989,000 or 7 percent and 10 percent, and for private carriers they were $306,000 or 4 percent and 5 percent.*

Station expenses and percentages of total freight and total transportation expenditures, respectively, for the different classes of carriers in the several districts or services were - Atlantic Coast common $3,198,000 or 14 percent and 22 percent, others $47,000 or 1 percent and 2 percent;

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* Analysis 93.3.

Atlantic Gulf common $1,683,000 or 11 percent and 19 percent; Intercoastal common $4,237,000 or 10 percent and 17 percent, others $57,000 or 18 percent and 29 percent; Inland Waterways common $1,685,000 or 21 percent and 36 percent, others $8,000 or 1.6 percent and 2.5 percent; Great Lakes common $829,000 or 10 percent and 19 percent, others $1,087,000 or 7 percent and 10 percent; and Pacific Coast common $1,150,000 or 9 percent and 17 percent, others $97,000 or 13 percent and 16 percent.*

Petroleum Agency costs of petroleum pipe line companies in 1932 aggregated about 1 1/2 million dollars, representing a ratio to revenue earned of 1 percent. This was equivalent to $17 per route mile, 2 cents per net ton of traffic originated and .1 mill per net ton mile.#

Movement costs in 1932 amounted to 17 1/4 million dollars, a ratio of 8 percent of revenue. This amounted to $186 per mile of pipe line operated, 19 cents per net ton of traffic originated and .5 mill per net ton mile.#

95. Assemblage of Carlots into Cargo Loads

Railway The word "assemblage" is used to describe yard transportation functions in the aggregate. These functions consist of: Classification of cars before and after movement in road-haul service, either for final delivery, interchange or initial or further movement in road service; the interchange of cars between carriers; and the transfer of cars between different yards of the same carrier and the switching of cars to and from house, team or industry tracks.

These costs aggregated in 1932, 311 million dollars or 12 percent of carrier freight revenues, and 16 percent of total costs. They cost 58 dollars per train operated, about 11 1/2 dollars per car originated, 80 cents per train mile and 3 cents per loaded car mile.ϕ

Ordinarily the costs of these functions are not separately kept by carriers. The estimate herein is based upon the locomotive hours employed in each, in the large number of tests which were made in connection with the study.

Waterway Certain types of expenditures could be definitely distinguished as assemblage costs. For all reporting carriers these amounted to $5,560,000 which was 4 percent of total freight expenditures and 7 percent of total transportation expenses. For common carriers such

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* Analysis 93.3. # Analysis 93.1.
ϕ Analyses 93.1, 93.2.

expenditures amounted to $5,139,000 or 5 percent of total freight expenses and 8 percent of total transportation expenditures, while for contract carriers similar figures were $368,000 or 3 percent and .4 percent; and for private carriers $54,000 or .7 percent and .9 percent.*

On the Atlantic Coast, common carriers spent in 1932 for assemblage $2,144,000 or 9 percent of total freight expenditures and 15 percent of total transportation expenses, and other carriers spent $304,000 or 7 percent and 11 percent, respectively, of total freight and total transportation expenditures for assemblage.*

In the other districts by classes of carriers the sums expended and percentages of total freight and total transportation expenses, respectively, were - Atlantic Gulf common $774,000 or 5 percent and 9 percent, others $6,000 or .6 percent and .7 percent; Intercoastal common $1,083,000 or 2 percent and 4 percent, others $6,000 or 2 percent and 3 percent; Inland Waterways common $509,000 or 6 percent and 11 percent, others $14,000 or 3 percent and 4 percent; Great Lakes common $244,000 or 3 percent and 6 percent, others $93,000 or .6 percent and .9 percent; and Pacific Coast common $385,000 or 3 percent and 6 percent.*

These assemblage expenditures were broken down between dock assemblage and lighterage expenses. For all reporting carriers, dock expenses amounted to $4,048,000 which was 3 percent of the total freight expenditures and 5 percent of total transportation expenses. For common carriers, such expenditures amounted to $3,914,000 or 4 percent of total freight expenses and 6 percent of total transportation expenditures, while for contract carriers similar figures were $79,000 or .6 percent and .8 percent, and for private carriers $54,000 or .7 percent and .9 percent.*

On the Atlantic Coast, common carriers spent, in 1932, for assemblage $1,414,000 or 6 percent of total freight expenditures and 10 percent of total transportation expenses, and other carriers spent $16,000 or .4 percent and .6 percent, respectively, of total freight and total transportation expenditures for assemblage.*

In the Atlantic Gulf service, similar figures were for common carriers $438,000 or 3 percent and 5 percent, and for other carriers $6,000 or .6 percent and .7 percent.

In the Intercoastal trade, the figures were for common carriers $1,007,000 or 2 percent and 4 percent, and for other carriers $6,000 or 2 percent and 3 percent.*

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* Analysis 93.3.

On the Inland Waterways, such figures were for common carriers $494,000 or 6 percent and 11 percent, and for other carriers $14,000 or 3 percent and 4 percent.*

On the Great Lakes, similar figures were for common carriers $244,000 or 3 percent and 6 percent, and for other carriers $91,000 or .6 percent and .9 percent.*

On the Pacific Coast, common carriers spent $318,000 for assemblage or 3 percent of total freight expenses and 5 percent of total transportation expenditures, but other carriers in this district reported no such expenditures.*

Lighterage expenses were incurred by some carriers in some districts. The total amount of lighterage expenses reported amounted to $1,514,000 or 1 percent of total freight expenditures and 2 percent of total transportation expenses. Common carriers spent $1,224,000 for lighterage which was 1 percent of their total freight expenses and 2 percent of their total transportation expenditures, contract carriers spent $290,000 or 2 percent and 3 percent, respectively, of their total freight and transportation expenses for lighterage, but private carriers reported no such expenses.*

The districts, class of carriers, sums expended and percentages of total freight and total transportation expenditures, respectively, were - Atlantic Coast common $730,000 or 3.1 percent and 5 percent, contract $288,000 or 6.7 percent and 10 percent; Atlantic Gulf common $336,000 or 2.2 percent and 3.9 percent; Intercoastal common $76,000 or .2 percent and .3 percent; Inland Waterways common $15,000 or .2 percent and .3 percent; Great Lakes contract $2,000 or .01 percent and .02 percent; and Pacific Coast common $67,000 or .5 percent and 1 percent.*

Petroleum

The cost of assembling traffic for movement by pipe lines amounted, in 1932 to over 9 million dollars. This amounted to 4 percent of the revenue earned and was equal to an expense of $98 per route mile of pipe line operated. This was equivalent to 11 cents per net ton and to .3 mill per net ton mile of traffic transported.#

96. Classification (Marshalling) of Cars

Railway

Judged by results of the tests which underlie the report, about 40 percent of the total time of yard locomotives is employed in classification service. The average time shown by tests in the Eastern Metropolitan Terminals was 37 percent; metropolitan terminals in the South, 54 percent; in the West and the country as a whole, 39 percent. The average time in the Eastern Major Terminal areas was 41 percent and for similar areas in the South, 44 percent, in the West 51 percent, and the nation, 48 percent.* Statistically there was an average of 7.3 classifications for every car originated in 1932. in an average haul of 353 miles# and at an average cost of 62 cents each.ø Relatively the cost of classification was about one third as great as the total cost of road transportation expense./ It was 6.5 percent of total rail costs; aggregated $24 per train, $4.71 per car, 33 cents per train mile, and 1.2 cents per car mile.** The cost per classification varied from 47 cents in Southwestern Territory to 81 cents in Southeastern Territory, and the number of minutes per classification from 2.9 in New England Territory to 6.2 in Southeastern Territory.##

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* Analysis 93.3. # Analysis 93.1.

The necessity for classification is partly in the number of trains in which the average car is hauled - 4 1/2 trains.øø Since the average journey is 353 miles, the average journey in each train is under 79 miles.

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* Analysis 95.2.

# Analysis 45.17.

ø Of the total switch engine hours amounting to 36 million, (analysis 105.1), 40 percent or 14.4 million hours were spent classifying the 27.1 million cars originated (analysis 3.2). Thus .53 hour (14.4 divided by 27.1) or 32 minutes was spent in classifying the composite car throughout its journey. As 4.4 minutes were required per classification (analysis 95.2) the average number of classifications per car originated amounts to 7.3 (32 divided by 4.4). Transportation cost per switch engine hour amounted to $8.29. (exhibit 521), or 13.8 cents per minute, so that the average cost per classification was 62 cents (13.8 multiplied by 4.4).

/ Analyses 93.1 and 95.1.

** Analysis 95.1.

## Expense per switch engine hour $7.43 in Southwestern and $7.88 in Southeastern, (exhibit 521). Average time per classification, 3.8 minutes in Southwestern and 6.2 minutes in Southeastern, (analysis 95.2).

øø Total cars originated 27 million; average cars per train 26; trains required if each ran average haul, 1,167 thousand; actual trains operated, 5 1/4 million; ratio 4 1/2.

97. Transfer of Cars from Yard to Yard

Railway Transfers are of two kinds - single carrier where the movement is between yards of the same carrier in the same terminal, and multiple carrier where cars are transferred (interchanged) from one carrier to another. These switching operations are made necessary by the maintenance of separate carrier yards in the same terminal area. In 1932 their cost aggregated 100 million dollars, which was 5 percent of the total rail cost. A little over 30 percent of switch engine time was employed in transferring cars between yards of the same or different carrier. The cost per train was $19, per car originated just under $3.69 and per car mile 1 cent.* On the average, every car originated in the average journey of 353 miles underwent 5.8 transfers including interchanges or 4.1 transfers excluding interchanges.#

The foregoing costs did not vary greatly between the different territories. The cost of these two functions (transfers and interchanges) varied from 2 percent of total rail cost in Pacific Northwest Territory to 7 percent in Trunk Line Territory. The cost per train mile varied from 9 cents in Pacific Northwest and Pacific Southwest Territories to 53 cents in Trunk Line Territory, and the car mile cost from 3.2 mills in Pacific Northwest Territory to 16.9 mills in Trunk Line Territory.ø

98. Industrial Switching of Cars

Railway The remainder of yard locomotive time - 28 percent - was employed in switching cars between delivery tracks and initial or final yards. In 1932 this aggregated 83 million dollars, or $3.07 per car originated and 8 mills per car mile.≠ The full delivery cost embracing all functions is discussed more fully in a later connection.

Waterway The cost of lighterage of water carlot carriers is discussed in Section 95.

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* Analysis 95.1.

# Of 36.1 million total switch engine hours, 30.45 percent were spent in transfer of cars (analysis 95.2) amounting to 11.9 million hours or .44 hours (26.2 minutes) per car originated. Average time consumed per transfer was 4.5 minutes (analysis 95.2) so average number of transfers per car originated amount to 5.8 (26.2 divided by 4.5). Transfers excluding interchanges consumed 24.59 percent of total switch engine hours or 8.9 million hours. This amounted to .33 hours (19.7 minutes) per car originated. The average time consumed per transfer was 4.8 minutes, so the average number of transfers per car originated amounted to 4.1 (19.7 divided by 4.8), analysis 95.2.

ø Analysis 95.1.

≠ Analyses 95.1, 95.2.

99. Road Movement of Cars

Railway Road transportation expense consists primarily of direct cost of operating trains, including necessary supplies. The total cost for the country as a whole amounted to about 13 percent of total revenues and 17 1/2 percent of total costs; about $64 per train; about $13 per car originated; 53 cents per ton originated; $14 per train hour; 88 cents per train mile; and 3 1/3 cents per car mile.* Highest costs were found in Trunk Line and New England, about $1.15 per train mile and 4 cents per car mile. The lowest costs were in the Southeastern and Southwestern Territories, about 72 cents per train mile and 3 1/3 cents per car mile. In Central Territory the train mile cost was 83 cents and the car mile cost just under 3 cents.#

Waterway Voyage expenses of reporting water carriers in 1932 amounted to $59,400,000 which was 45 percent of their total freight expenditures and 75 percent of total transportation expenses. For common carriers, voyage expenses amounted to $45,930,000 or 42 percent and 72 percent of total freight and transportation expenses, respectively, for contract carriers, similar figures were $8,101,000 or 58 percent and 86 percent; and for private carriers, they were $5,338,000 or 67 percent and 94 percent.*

Voyage expenses and percentages of total freight and total transportation expenditures, respectively, for the different classes of carriers by district were - Atlantic Coast common $9,129,000 or 39 percent and 63 percent, others $2,509,000 or 58 percent and 88 percent; Atlantic Gulf common $6,257,000 or 41 percent and 72 percent, others $762,000 or 77 percent and 99 percent; Intercoastal common $19,572,000 or 46 percent and 79 percent, others $135,000 or 42 percent and 69 percent; Inland Waterways common $2,503,000 or 31 percent and 53 percent, others $295,000 or 63 percent and 93 percent; Great Lakes common $3,290,000 or 39 percent and 75 percent, others $9,223,000 or 61 percent and 89 percent; and Pacific Coast common $5,179,000 or 42 percent and 77 percent, others $515,000 or 67 percent and 84 percent.ø

Petroleum The expense of moving petroleum via pipe line is shown in analysis 93.4.

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* Analysis 93.1.

ø Analysis 93.3.

# Analysis 93.2.

XXVI TRANSPORT OVERHEAD

100. Transport Overhead Costs

Railway Overhead costs consist of "general expenses" and "traffic expenses", (which in the underlying statistics are frequently consolidated under the single head of "administration expense",) taxes and risk. The latter is the amount paid by carriers to patrons for loss and damage to or in connection with freight shipments.

Overhead expense in 1932 aggregated about 371 million dollars, 15 percent* of the revenue and 19 percent of total costs.# It constituted a burden of 1,529 dollars per mile of road, 13.68 dollars per car, and 3.59 cents per car mile.* These costs were highest in Trunk Line Territory where they aggregated 3,788 dollars per route mile and 4 1/3 cents per car mile, and lowest in the Pacific Northwest where they amounted to 795 dollars per route mile and 2.98 cents per car mile.#

Although next to the cost of capital servicing, these costs probably are the most static of rail costs, there is no evidence that they decrease with the density of traffic. The contrary seems true. From the standpoint of gross ton mile density per mile of road, the standing of the several rate territories, beginning with highest density are: Trunk Line first, Pocahontas second;ø Central third; New England fourth; Pacific Southwest⌿ fifth; Southeastern⌿ sixth; Western Trunk Line seventh; Pacific Northwest eighth; and the Southwestern ninth.** The rank of the territory from the standpoint of highest overhead cost per traffic unit - car miles - are Trunk Line first; New England second; Southeastern third; Central fourth; Western Trunk Line fifth; Pocahontas sixth; Southwestern seventh; Pacific Southwest eighth; and Pacific Northwest ninth. If the gross ton miles be used as the cost unit, New England is highest; Trunk Line second; Southeastern third; Western Trunk Line fourth; Central fifth; Pacific Southwest sixth: Southwestern seventh; Pacific Northwest eighth; and Pocahontas ninth.#

Petroleum The overhead cost of petroleum pipe line transportation companies in the United States in 1932 amounted to about 25 1/2 million dollars, distributed among the following items; administration costs, about 9 3/4 million, general expenses, about 9 3/4 million, and taxes approximately 16 million dollars. The ratio of the total overhead expenses to revenue earned in 1932 amounted to 12 percent. This was equivalent to $277 per mile of pipe line operated, 31 cents per net ton of traffic, and .8 mill per net ton mile.*

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* Analysis 100.1. # Analysis 100.5.

ø From a net ton-mile standpoint,Pocahontas is first and Trunk Line second.

⌿ On a net ton-mile basis Southeastern and Pacific Southwest change places. ** Analysis 70.6.

101. Transport Taxes

Railway Taxes paid by railways in 1932 constituted 8 percent of their revenue* and 10 percent of rail costs.# The cost ratio was highest in the Pocahontas and lowest in the Southwest. Taxes averaged $796 per mile of road in the nation $1,972 in Trunk Line Territory $1,245 in Pocahontas, $1,180 in Central Territory, $1,012 in New England; $619 in Southeastern Territory; $608 in the Pacific Southwest; $552 in Western Trunk Line; $414 each in Pacific Northwest and Southwestern.# The cost of taxes per car owned was about $90 each.ø The tax burden upon each car originated averaged $7 and varied from $5 in New England to $11 in the Pacific Northwest. The cost per loaded car mile ran from 1 1/2 cents in Pacific Northwest and Pacific Southwest to 2.2 cents in Trunk Line and New England.#

Waterway The total amount of taxes paid in 1932 by reporting water carriers was reported as $1,100,000 or .9 percent and 3.7 percent of total freight and total overhead expenditures respectively. For common carriers, similar figures were $944,000 or .9 percent and 3.5 percent, for contract carriers, $111,000 or .8 percent and 4.7 percent and for private carriers, $67,000 or .8 percent and 8.7 percent, respectively.⌿

By districts and by class of carrier, taxes paid and percentages of total freight and total overhead expenditures respectively were - Atlantic Coast common $589,000 or 2.5 percent and 13.3 percent, others $42,000 or 1 percent and 8.5 percent; Atlantic Gulf common $78,000 or .5 percent and 3.4 percent; Intercoastal common $20,000 or .05 percent and .2 percent; Inland Waterways common $47,000 or .6 percent and 3.4 percent; others $26,000 or 5.5 percent and 30.2 percent;** Great Lakes common $141,000 or 1.7 percent and 5.4 percent, others $108,000 or .7 percent and 4.5 percent; and Pacific Coast common $69,000 or .6 percent and 1.7 percent, others $3,000 or .4 percent and 3.1 percent.##

Petroleum The taxes paid by petroleum pipe lines in 1932 amounting to over 16 million dollars represented a ratio of 8 percent of the total revenue earned, $173 per mile of pipe line operated, 19 cents per net ton of traffic originated and .5 mills per net ton mile.øø

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* Analysis 100.1. # Analysis 100.5.

ø 193 million dollars divided by 2,166 thousand cars.

⌿ Analysis 100.1.

** The low percentages shown for common carriers in this district are influenced by the inclusion in this group of the Inland Waterway Corporation.

Analysis 100.2. øø Analysis 100.3.

Highway

Truck operators do not or cannot segregate their tax items in such a way as to make them susceptible to analysis. Some taxes are variable with mileage, others are fixed on a yearly basis, and still others are based on property values. Moreover, gasoline and oil taxes are almost always included with the costs of gasoline and oil.

The national average State gasoline tax rate, the national average local gasoline tax rate, and the Federal tax rate on gasoline and oil are readily obtainable. To apply these to consumption data would seem a more logical and more accurate procedure. In 1932 the total gasoline taxed by States yielded an average of 3.6 cents per gallon. When added to the total gasoline taxed locally the yield rises to 3.63 cents per gallon. With 1 cent per gallon added as the Federal tax, the total becomes 4.63 cents per gallon. This was applied, as was also the Federal oil tax rate of 1 cent per quart.

License fees were a more difficult consideration. The Bureau of Public Roads conducted a survey of the payments made in 1932, according to vehicles of various capacity classifications in the contract, common carrier, and private motor vehicle groups.

Certain vehicles were unassignable to the capacity classifications due to lack of data. For purposes of this study these were allocated according to the percentage distribution of the assignable vehicles.

Certain amounts were likewise unassignable. These were allocated according to the distribution of the assignable amounts.

Certain special fees (considered here as variable fees) were similarly unassignable and these also were allocated, but on the basis of the distribution of the fixed fees, the amount in this instance being relatively large.

For-hire fees per vehicle were then determined by adding the vehicles and fees of the several common and contract carrier groups.

The fees for the several trailer groups were added to the fees of the appropriate trucks to determine the tax on combinations.

The detailed procedure and calculations are presented in the Coordinator's report on Motor Vehicle Subsidy. The following payments are revealed.

State Registration and License Fee Payments

Per Truck, 1932.

Average Gross Weight, lbs.	For-hire Trucks	Private Trucks	For-hire, in Excess of Private
6,608	$ 22.96	$ 15.47	$ 7.49
9,467	52.11	38.13	13.98
12,910*	53.49	31.98	21.51
14,526	87.40	67.44	19.96
16,088*	116.91	76.25	40.66
19,083	127.54	98.33	29.21
19,083*	186.14	132.34	53.80
26,022	151.52	115.97	35.55
32,427*	275.14	180.91	94.23

Since by far the greater part of the difference between the private and for-hire payments is in the form of special fees based on extent of operation - usually mileage, ton mileage, gross receipts, etc., - it is here regarded as a variable expense.

Operator returns show inclusions which are not determinable over and above these figures developed from the Bureau of Public Roads' 1932 survey. Local fees and property taxes on the vehicles make up, perhaps, the major part of the difference. On the basis of this assumption and such facts as to property taxes as were available, a 1 1/2 percent rate was applied to vehicle price as a fair estimate of general taxation plus a small average local fee.

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* Combination (tractor semitrailer).

102. Administrative Cost

Railway

Freight traffic and general expenses aggregated in 1932 178 million dollars, which was equal to 7 percent of freight revenue* and 9 percent of freight costs.# Traffic expense amounted to 3 percent and general expense 6 percent of freight costs. The total administrative cost aggregated 6 1/2 dollars per car and 1 7/10 cents per loaded car mile. The ratio of administrative expense to freight cost was highest in Pocahontas Territory and lowest in Southwestern Territory. The cost per car mile was highest in Trunk Line Territory, 2 cents, and lowest in the Pacific Northwest, 1 2/5 cents. Lowest traffic expense ratios to total freight expense were found in Southwestern, New England and Central Territories; the highest in Southeastern and Pocahontas Territories. The lowest cost per car was found in New England, 1 3/5 dollars and the highest in the Pacific Northwest, 3 3/5 dollars, which, however, had the lowest cost per loaded car mile, just over 5 mills, while the highest was in Trunk Line, 7.4 mills. The Southwest also showed the lowest ratio of general to total expense, 5.7 percent compared with 6.1 percent in the highest territory - Pocahontas. The lowest cost per car was found in New England, 2 4/5 dollars and the highest in Pacific Northwest, 6 3/4 dollars, which, however, showed the lowest general expense per car mile, 9 mills compared with that of the highest territory - 1 1/3 cents in Trunk Line Territory.#

Waterway

Total administration expenses of reporting waterline carriers who reported in detail for 1932 amounted to $29,000,000. This was 22 percent of their total freight expenditures and 96 percent of their total overhead expenses. Similar figures for common carriers were $26,220,000 or 24 percent and 97 percent, for contract carriers $2,235,000 or 16 percent and 95 percent; and for private carriers $706,000 or 9 percent and 91 percent.*

For common carriers and other carriers by districts, the total amount of administration expenses and percentages of total freight and total overhead expenditures for 1932 were - Atlantic Coast common $3,851,000 or 16 percent and 87 percent, others $453,000 or 11 percent and 92 percent; Atlantic Gulf common $2,241,000 or 15 percent and 97 percent, others $3,000 or .3 percent and 99 percent; Intercoastal common $12,383,000 or 29 percent and 99 percent, others $33,000 or 10 percent and 100 percent; Inland Waterways common $1,330,000 or 16 percent and 97 percent, others $60,000 or 13 percent and 70 percent; Great Lakes common $2,450,000 or 29 percent and 94 percent, others $2,300,000 or 15 percent and 96 percent; and Pacific Coast common $3,965,000 or 32 percent and 98 percent, others $93,000 or 12 percent and 97 percent.ø

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* Analysis 100.1. # Analysis 100.5.
ø Analyses 100.2 and 100.3.

Administration expenditures were broken down into traffic and other or general. Traffic expenses for all reporting carriers amounted to $12,000,000 or 9 percent of total freight expenditures and 40 percent of total overhead expenses. For common carriers, similar figures were $11,619,000 or 11 percent and 43 percent, for contract carriers $383,000 or 3 percent and 16 percent, and for private carriers $119,000 or 1 percent and 15 percent.*

Traffic expenditures for the different classes of reporting carriers in the several districts, and percentages of total freight and total overhead expenses, respectively, were - Atlantic Coast common $1,995,000 or 9 percent and 45 percent, others $53,000 or 1 percent and 11 percent; Atlantic Gulf common $1,552,000 or 10 percent and 67 percent, others $3,000 or .3 percent and 99 percent; Intercoastal common $4,891,000 or 12 percent and 39 percent, others $10,000 or 3 percent and 30 percent; Inland Waterways common $446,000 or 5 percent and 32 percent, others $32,000 or .7 percent and 37 percent; Great Lakes common $889,000 or 11 percent and 34 percent, others $396,000 or 3 percent and 16 percent; and Pacific Coast common $1,846,000 or 15 percent and 46 percent, others $8,000 or 1 percent and 8 percent.#

General expenses of all reporting carriers amounted to $17,000,000 or 13 percent of total freight expenditures and 56 percent of total overhead expenses. Common carriers spent, in 1932, for general expenses $14,601,000 or 13 percent of their total freight expenditures and 54 percent of their total overhead expenses. For contract carriers, similar figures were $1,852,000 or 13 percent and 79 percent, and for private carriers, they were $587,000 or 7 percent and 76 percent.*

General expenses and percentages of total freight and total overhead expenditures by districts and classes of carriers for 1932 were - Atlantic Coast common $1,855,000 or 8 percent and 42 percent, others $399,000 or 9 percent and 81 percent; Atlantic Gulf common $690,000 or 5 percent and 30 percent; Intercoastal common $7,492,000 or 18 percent and 60 percent, others $23,000 or 7 percent and 70 percent; Inland Waterways common $885,000 or 11 percent and 64 percent, others $28,000 or 6 percent and 33 percent; Great Lakes common $1,561,000 or 19 percent and 60 percent, others $1,904,000 or 13 percent and 79 percent; and Pacific Coast common $2,119,000 or 17 percent and 53 percent, others $85,000 or 11 percent and 89 percent.#

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* Analysis 100.1. # Analyses 100.2 and 100.3.

Petroleum Administration expenses and general expenses, amounting to over 9 1/2 million dollars, represent the following unit expenses; 5 percent of the revenue earned,.$104 per mile of pipe line operated, 12 cents per net ton and .3 mill per net ton mile.*

No distribution was made of the traffic costs as these expenses were absorbed in administration and general expenses.

Highway General overhead includes such items of office, garage, and shop overhead and management, clerical, and superintendence salaries and wages as are not directly attributable to any of the foregoing items. Operators were asked in the questionnaire to include terminal and platform costs.

Variety in this item was very great for private operators but somewhat better conformity was found with the data furnished by the for-hire concerns. The trend of the curve applicable to the latter group was fitted to both sets of data on the basis of the indicated mean coefficient for the group averages. The equations are:

General overhead, for-hire, dollars, =

$$8 \text{ (gross weight, lbs.)}^{0.5}$$

General overhead, private, dollars, =

$$4.25 \text{ (gross weight, lbs.)}^{0.5}$$

Eighty percent of the amounts in both instances represents payroll items.

It will have been noted perhaps, that differences between for-hire and private trucks are only infrequently recorded. This is true. But they have been mentioned wherever there was evidence to warrant separate consideration. The real difference occurs in the annual mileage and that difference is reflected throughout most items of expense.

Garage rent includes the rent paid for garage facilities, and taxes, insurance, maintenance, water, and retirement of and interest on investment in building and land used for garaging equipment, or such charges prorated where the property is used jointly for other purposes. In the usual way, with the coefficient determined from the mean of the 6 weight groups, the generalization was reached -

Garage rent, dollars, =

$$12.74 \text{ (gross weight, lbs.)}^{0.25}$$

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* Analysis 100.4.

Highway taxes of 8 cents per ton handled are based on an estimated average load of 10 tons per day.

103. Insurance

Waterway The nature of the operations conducted by water carriers makes insurance on equipment an important item of cost. All reporting carriers spent, in 1932, $8,674,000 for insurance which was 6 percent of their total expenses. Common carriers insurance expenses amounted to $6,695,000 or 5 percent of their total expenditures. For contract carriers, similar figures were $998,000 or 7 percent and for private carriers they were $981,000 or 12 percent.*

Insurance expenses and percentages of total expenditures by classes of carriers for the several districts in 1932 were - Atlantic Coast common $1,684,000 or 5 percent, contract $124,000 or 5 percent, private $195,000 or 10 percent; Atlantic Gulf common $1,085,000 or 6 percent, contract $57,000 or 7 percent, private $17,000 or 11 percent; Intercoastal common $2,012,000 or 4 percent, private $37,000 or 12 percent; Inland Waterways common $214,000 or 3 percent, contract $22,000 or 5 percent, private $2,000 or 19 percent; Great Lakes common $696,000 or 6 percent, contract $758,000 or 8 percent, private $728,000 or 14 percent; and Pacific Coast common $1,004,000 or 6 percent, contract $37,000 or 8 percent, private $3,000 or 1 percent.*

Highway Vehicle insurance data were provided by operators, but the itemized breakdown of the kinds or purposes of the insurance was unavailable. It was felt that the operator's coverage would represent a minimum or would reflect particularly the requirements of some specialized service. In view of the anticipated comparison with rail costs it was further felt that the relative ability of the shipper to recover should be equalized. Moreover, insurance, whether actually carried in terms of a policy or not, seemed to be a charge against costs.

Rates varied between sections of the country, between vehicles of different sizes, between for-hire and private carriers, between long-haul and short-haul operations, with the age and value of the vehicle and the value of the cargo. The problem was not without its difficulties. It was placed before one of the leading commercial motor vehicle insurance agencies of the country whose experience is nationwide. Average rates were made available covering thirty-eight representative cities.

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* Exhibit 804.

These average rates* were for items of public liability, property damage, cargo, fire, theft, and driver insurance, on for-hire and private trucks and trailers. They were applied to the average conditions for eight different capacities as represented by this study, resulting in the following totals for for-hire trucks:

Rated Capacity - Pounds	Insurance Cost - Dollars
2,000 Trucks	182.73
4,000 Trucks	278.69
6,000 Trucks	311.06
10,000 Trucks	435.84
30,000 Combinations	836.82
40,000 Combinations	946.61
50,000 Combinations	1,055.68
60,000 Combinations	1,153.15

There was some question as to the wisdom of applying a general cargo coverage to private trucks, but upon the basis of several calculations 75 percent of the total insurance cost of for-hire trucks was taken as representing comparable insurance costs for the private group. Operator data indicated no consistent differences between the two classes. The estimates may be averaged thus:

$$\text{Vehicle insurance, for-hire, dollars} = 0.371\,(\text{gross weight, lbs.})^{0.717}$$

$$\text{Vehicle insurance, private, dollars} = 0.278\,(\text{gross weight, lbs.})^{0.717}$$

These average rates* were for items of public liability,

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* The 38 cities for which rates were made available are as follows: New York City; Boston, Mass.; Philadelphia, Pa.; Baltimore, Md.; Washington, D. C.; Birmingham, Ala.; Los Angeles, Calif.; San Francisco, Calif.; Denver, Colo.; Hartford, Conn.; Jacksonville, Fla.; Chicago, Ill.; Indianapolis, Ind.; Kansas City, Mo.; Louisville, Ky.; New Orleans, La.; Portland, Maine; Detroit, Mich.; Duluth, Minn.; Jackson, Mich.; St. Louis, Mo.; Helena, Mont.; Lincoln, Nebr.; Jersey City, N. J.; Charlotte, N. C.; Cleveland, Ohio; Columbus, Ohio; Oklahoma City, Okla.; Portland, Oreg.; Columbia, S. C.; Memphis, Tenn.; Salt Lake City, Utah; Seattle, Wash.; Charleston, W. Va.; Milwaukee, Wis.; Dallas, Tex.; Santa Fe, N. Mex.; and Phoenix, Ariz.

XXVII YARD AND TERMINAL OPERATIONS

104. Elements of Yard Operations

Railway

Yard operations are those which take place in terminal areas; road operations, those outside of terminal areas. Terminal operations are those incident to the receipt, collection or delivery, and handling in origin and destination terminals. Line operations include all road operations and operations in yards other than those at origin and destination - "intermediate yardings." It should be borne in mind that in the cost of these several operations, all functions - overhead, roadway, station maintenance, power maintenance, car maintenance, as well as transportation - are included.

The word "terminal" as employed in the survey and the report is used in its narrow meaning to designate carrier activities incident to originating and terminating a shipment. It differs from yard in that the latter embraces all activities which take place in a terminal area, including intermediate yarding and handling of cars passing through the area en route. The service involves two distinct activities - station work and billing necessary for receipt or delivery of shipments, and the actual physical collection and assemblage (or disassemblage) in carrier trains. The former activities include three groups of function costs - station maintenance, transportation, and overhead. The latter include yard, power and car maintenance, yard transportation, and overhead. For convenience the former costs are called "station costs" and the latter "delivery costs", though as stated they cover the work of collection and assemblage as well as delivery.

Localizing all freight costs between road and yard, we find that in 1932, 1,068 million dollars were spent in the latter, which was over 54 percent of total expense.* By rate territories, this percentage ran: New England, 54 percent; Trunk Line, 60 percent; Central 60 percent; Pocahontas, 49 percent; Southeastern, 50 percent; Western Trunk Line, 54 percent; Southwestern, 47 percent; Pacific Northwest, 41 percent; and Pacific Southwest, 45 percent.* If the total yard expense be apportioned between the primary assemblage functions - classification, transfer, interchange and industrial switching - upon the basis of locomotive hours spent in each service, 22 percent of the total freight cost would be assigned to classification, 16 percent to transfers and interchanges, and 16 percent to industrial switching.#

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* Analysis 104.4.

# Analysis 95.2. Yard expense amounts to 54.3 percent of total freight cost (analysis 104.4).

Analyzing the functions which go to make up the rail costs we find the following elements in rail yard costs, stated in percents of the total yard costs: Maintenance of roadway and structure 5 percent; maintenance of power (locomotives and structures) 6 percent; maintenance of cars 29 percent; assemblage 29 percent; operation of station 13 percent; and overhead 18 percent. From a service standpoint these divisions are power 7 percent; cars 36 percent; switching (assemblage and road maintenance) 40 percent; and station 17 percent.*

Included within these yard operations are terminal yardings, i.e., those which pertain to the origination and termination of cars; and intermediate yardings, those which pertain to the handling of cars in yards other than those at origin and destination. Separation of these two classes of yardings was made possible by a large number of terminal studies conducted by the carriers. Application of these studies to the actual costs of the yards reveals that 32 percent of the yard expenses were for intermediate and 68 percent for terminal yardings.#

Road expenses are made up of the following functional elements - maintenance of way and structure 21 percent; maintenance of equipment 19 percent; transportation 40 percent; and overhead 20 percent. From a service standpoint they group into power maintenance 20 percent; car maintenance 4 percent; train movement 74 percent; and station 2 percent.ø

105. Terminal Operations

Railway The carriers reported 1,517 points at which switch engines were operated, and 4,750 yards. In 1932, 198 thousand industry tracks (including duplications) were served, upon which there were originated or terminated 32 million cars. Of these tracks 75 thousand were in the Eastern District, accounting for 17 million cars; 29 thousand in the South, accounting for 6 million cars; and 94 thousand in the West, accounting for 9 million cars.

In these terminals, 36 million engine hours were employed in assemblage operations. The carriers reported 88 thousand miles of yard track⌿ with a capacity of 8 million cars (more than three times the entire freight car ownership), a capacity for 29 thousand of the 31 thousand locomotives owned and an annual repair shop capacity for 792 thousand locomotives - equal to over 2 shoppings per month and annual car repair shop capacity for 8 million cars or 3 repairs per year.*

Highway In the field study of terminal trucking operations it was found that the equipment used by the several operators differed widely. Tractor semitrailer operations predominated both in the number of companies using such equipment and the number of vehicles utilized. Medium-duty tractors, of 5 and 7 1/2 ton rating, are in service, as well as a few light-duty tractors of 1 1/2 ton rating. Except for one large operator using open rack bodies and tarpaulins, all bodies are fully enclosed, usually of medium-weight metal and wood construction, though some bodies were of heavier construction and a few light-weight all-metal bodies of recent design were observed. In only one operation are semitrailers equipped with demountable bodies. Body dimensions range in width and height from 6 feet to 7 1/2 feet and in length from 14 to 20 feet. A shuttle service is most frequently used, the number of semitrailers per tractor varying from two to five, three being the usual number. In several operations a single-unit tractor semitrailer combination is used in lieu of a truck. Compared with a burden-carrying truck capable of doing the same work, such a combination requires less investment in motive power, can be manipulated more readily in congested spaces, uses less garage space (the semitrailer generally being parked outside), and usually has a lower operating cost and is subject to lower license fees. With a single unit tractor semitrailer in service it is possible to install at relatively low cost additional semitrailers thereby creating a shuttle movement. This results in more intensive use of the tractor and driver by reducing the dead time at both ends of the run due to loading and unloading of goods. Inasmuch as a tractor with driver costs from 4 to 6 cents per minute it is important to keep the unit at work producing transportation. By contrast, a semitrailer costs about one quarter of one cent per minute. The flexibility inherent in an operation using tractors and multiple unit semitrailers makes possible more effective control and greater operating efficiency than can be obtained with a single unit vehicle equipped with fixed body. This of course means lower operating costs. When the freight-carrying body is made demountable from the semitrailer a further degree of flexibility is introduced with still lower operating costs made possible and the way is opened to coordinated movement of goods by all types of transportation agencies.

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* Exhibit 521.

# Total yarding expense 1,068 million dollars, from analysis 104.4; terminal yarding expense 729 million dollars from analysis 106.4; remainder is intermediate yarding expense.

ø Exhibit 440.

⌿ Analysis 105.4. Reports to the Commission were 101,000 miles. The discrepancy was largely among Western carriers. Time did not permit a reconciliation.

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* Analyses 105.1 to 105.5, inclusive.

Trucks equipped with demountable bodies which can be transferred between truck chassis and another vehicle or a platform quickly and inexpensively, offer a service comparable in flexibility and at probably lower cost than tractors hauling multiple semitrailers with fixed bodies. In making this comparison it is assumed that the freight is transferred from the highway vehicle body to some other conveyance before further transportation takes place. Such rehandling of freight is not only wasteful and unnecessary, but it is slow and costly. If only the demountable body is transferred from one transportation medium to another and the freight kept intact from origin to destination, the total cost of transportation is considerably reduced. However, from the highway standpoint only the equipment used and work done can be compared. Thus the most flexible and efficient operation results from the use of tractors and semitrailers equipped with demountable bodies rather than from the use of trucks so equipped.

In the operations which were studied trucks with fixed bodies are used in the fewest number of instances. Heavy-duty trucks predominate, the average age being at least six years. Thus this equipment was purchased prior to the intensive development of tractor semitrailer equipment, and as a heavy-duty truck represents a relatively large capital expense it cannot be written off or replaced during depressed conditions, particularly when the truck is far from being worn out. Such truck equipment is used in hauling heavy freight in large units short distances - for example, rolls of newsprint or baled rags. The freight is quickly removed from the truck and with a short run of less than 1 1/2 miles it is soon ready for another load. Even so the dead time of the vehicle may easily amount to half of the working day. Medium and heavy-duty trucks are also used on long runs (15 to 20 miles) discharging all or part of the load at the first destination, perhaps taking on an additional few tons, and so making a day's run of 50 to 60 miles with a heavy average load. In such service the truck is efficiently employed, but if present day equipment should be purchased the same work could be done at less expense with a tractor and semitrailer.

In general, it was observed that very little new equipment is in use in terminal truck service and though most of the equipment is well maintained much of it is obsolete and subject to high direct operating costs. The average age is at least six or seven years, the oldest equipment consisting of heavy-duty trucks, some of which are seventeen years old and still in first class mechanical condition. In the next age group come heavy-duty tractors, semitrailers and medium-duty trucks, while the newest equipment ranging in age from one to four years consists of medium and light-duty tractors and semitrailers. Much of the older equipment has solid tires though some changeovers to pneumatics have been made. All of

the newer vehicles have full pneumatic tire equipment and there is no doubt that such tires result in improved operation and lower expense.

106. Terminal Costs

Railway

Terminal costs are 68 percent of the total yard costs.* The average cost of originating and terminating (both handlings) a car of freight was $26.84, $13.42 each handling.# Assuming that house track cars were all exclusively l.c.l. cars (and that all other track cars were other than l.c.l.), the average terminal cost per ton originated was $1.13.# The average cost (one handling) of a single carrier industry track, origination or termination, was $11.41. Team track were slightly less than industry track deliveries, and house track (due to l.c.l. station handling) slightly more.ø Industry track multiple carrier (reciprocally switched cars) deliveries, averaging $26.98, were consistently about twice the cost of single carrier service.ø The weighted average costs of all cars is affected by the volume of reciprocal switching, which is done at various cities, due to wide difference between the cost of single and multiple carrier services at all cities.†

Of the foregoing costs, station cost for team track and industry track cars averaged about $1 per car. For house track cars, however, it averaged $6.65 per car, due of course to the handling of l.c.l. traffic.**

The cost of individual terminal districts are shown in analyses 106.5 to 106.7, inclusive. The average switch engine minutes per car used in computing synthetic engine hours in making distribution between classes of tracks is shown in analysis 106.10.

Of the total terminal cars, 32 percent originated or terminated on house tracks, 10 percent on team tracks, and 58 percent on industry tracks. About 2 percent of the house track cars, 3 percent of the team track cars, and 16 percent of the industry track cars are "reciprocally switched", or multiple carrier cars, those switched to or from the origin or destination track by a switching carrier, other than the road-haul carrier.## The average cost of a single termination of all cars is $13.42 per car. The cost of service to or from house tracks is single carrier, $12.62, reciprocally switched, $21.28; to or from team tracks, single carrier, $10.63, reciprocally switched $27.72; to or from industry tracks, single carrier, $11.41, reciprocally switched $26.98.*

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* Analyses 104.1 and 106.1. # Analysis 106.1.

ø Analysis 106.5.

† Analysis 106.4 et seq. costs shown would be reduced about 2 1/2 percent by application of modified per diem basis of apportioning car maintenance expense described in section 68 supra.

** Analysis 106.5. ## Analysis 105.4.

Breaking the industry track cost into its component elements, we find the single carrier functions which account for the total cost of one termination, amounting to $11.41 to be as follows: Overhead $2.10; roadway 46 cents; power 60 cents; car $4.24; switching $3.16; station 73 cents; and marine 12 cents.# The multiple carrier industry track car involves a total cost of $23.91 made up of the following elements: Overhead $4.35; roadway 80 cents; power $1.19; car $9.90; switching $6.77; station 85 cents; and marine 15 cents.ø The direct expense, exclusive of overhead, in the case of single carrier service amounts to $9.31 per car, and in the case of reciprocally switched cars, to $19.56.#

It is to be noted that the cost of the reciprocally switched cars is uniformly more than twice the cost of the single carrier costs, measured by either full or direct cost.

Waterway The total freight expenses of water carriers were also segregated on a service basis between terminal and line. All costs including maintenance, transportation, and overhead were allocated or apportioned to one of these two types of service. Total terminal costs were then broken down between station service and delivery service, the former including such expenses as billing, cashiers, clerks, checking, stevedoring and watching, and the latter such items as lighterage, vessel operating shore expenses, and others.

Total terminal expenses for all reporting carriers for the year 1932 amounted to $28,317,000 or 22 percent of total freight expenditures. Common carriers terminal expenses were $26,238,000 or 24 percent of their total freight expenses, and for other carriers these figures were $2,079,000 or 9 percent.⌿

By district and by classes of carriers, the amount of terminal expense incurred in 1932 and the percentages of total freight expenditures were - Atlantic Coast common $7,670,000 or 33 percent, others $411,000 or 10 percent; Atlantic Gulf common $3,342,000 or 22 percent, others $6,000 or .6 percent; Intercoastal common $8,228,000 or 19 percent, others $85,000 or 27 percent; Inland Waterways common $2,984,000 or 37 percent, others $27,000 or 6 percent; Great Lakes common $1,656,000 or 20 percent, others $1,442,000 or 10 percent; and Pacific Coast common $2,360,000 or 19 percent, others $109,000 or 14 percent.*

Terminal station expense for all reporting carriers for the year 1932 amounted to $18,432,000 or 14 percent of total freight expenditures and 65 percent of total terminal expenses. For common carriers, similar figures were $16,878,000 or 15 percent and 64 percent, and for other carriers, they were $1,554,000 or 7 percent and 75 percent.*

For common carriers and for other carriers by districts, the amounts of terminal station expenses and the percentages of total freight expenses and total terminal expenses for the year 1932 were - Atlantic Coast common $3,948,000 or 17 percent and 51 percent, others $51,000 or 1 percent and 12 percent; Atlantic Gulf common $1,986,000 or 13 percent and 59 percent; Intercoastal common $5,997,000 or 14 percent and 73 percent; others $63,000 or 20 percent and 75 percent; Inland Waterways common $2,028,000 or 25 percent and 68 percent, others $10,000 or 2 percent and 37 percent; Great Lakes common $1,204,000 or 14 percent and 73 percent, others $1,321,000 or 9 percent and 92 percent; and Pacific Coast common $1,714,000 or 14 percent and 73 percent, others $109,000 or 14 percent and 100 percent.*

Terminal delivery expenses for all reporting carriers, in 1932, amounted to $9,886,000 or 8 percent of total freight expenditures and 35 percent of total terminal expenses. For common carriers similar figures for terminal delivery expenses were $9,360,000 or 9 percent and 36 percent, and for other carriers they were $525,000 or 2 percent and 25 percent.*

By districts and by classes of carriers terminal delivery expenses for 1932 and percentages of total freight expenses and total terminal expenses were - Atlantic Coast common $3,721,000 or 16 percent and 49 percent, others $360,000 or 8 percent and 88 percent; Atlantic Gulf common $1,355,000 or 9 percent and 41 percent, others $6,000 or .6 percent and 100 percent; Intercoastal common $2,230,000 or 5 percent and 27 percent, others $22,000 or 7 percent and 26 percent; Inland Waterways common $955,000 or 12 percent and 32 percent, others $17,000 or 4 percent and 63 percent; Great Lakes common $452,000 or 5 percent and 27 percent, others $121,000 or .8 percent and 8 percent; and Pacific Coast common $646,000 or 5 percent and 27 percent.*

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* Analysis 106.5.
ø Analysis 106.9.
# Analysis 106.8.
⌿ Analysis 106.1.

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* Analysis 106.2.

Petroleum The total terminal costs of pipe line transportation in 1932 amounted to 34 1/2 million dollars. This was equivalent to a ratio of 16 percent of the total revenue earned, $373 per route mile, 37 cents per net ton originated, and 1.1 mills per net ton mile.*

Of the total terminal expenses, station expenses absorbed 7 million dollars. This was equivalent to 3 percent of the revenue earned. It was equivalent to $78 per route mile, 8 cents per net ton originated, and .2 mill per net ton mile transported.*

The rest of the terminal expenses of pipe lines is represented by delivery costs which, in 1932, aggregated over 27 million dollars. This represented 13 percent of the revenue earned. It was equivalent to $295 per route mile of pipe line operated, to 29 cents per net ton and .9 mill per ton mile.*

Highway An indication of the comparative cost of different terminal operations as well as the general range of trucking costs, and variable and fixed expenses incurred by different operators using heavy, medium, and light-duty tractors and trucks, is shown in the tabulation in Analysis 106.12.

Direct comparison of the several operations is not possible, due to variations in the average daily mileage traveled, differences in age of vehicles, kind of loads carried, depreciation policy of the different operators, variations in wage scales, kind and amount of supervision required and charged against the trucking operations, and so on. For each type of vehicle the highest operating expense occurs in New York, decreasing as one goes westward, being lowest in the smallest cities. Each operation and each class of expense which is abnormally high or low can be explained. However, if the few operations which fall in this category be eliminated it will be observed that the total expense per 8-hour day of operating vehicles in terminal areas does not vary greatly, ranging between $15 and $22 for medium and heavy-duty vehicles.

While the daily operating expense of tractors and trailers is about the same as trucks, it will be noted that the vehicle "variable" expense, which increases directly with mileage in general is much higher for the tractors than for the trucks. Thus the tractors cover a greater daily mileage, hauling more loads, with a consequent reduction in the expense per load and per ton of freight transported. Inasmuch as "wages" and "fixed" expense do not vary with the amount of work done, and as the increase in vehicle "variable" expense due to additional mileage is very small it is important to get as much transportation work as possible out of each vehicle.

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* Analysis 106.1.

The amount of work done by different combinations of vehicles can be evaluated providing a record is kept of the number of loaded and empty trips, with the distance traveled and time consumed in making each trip. In this terminal study, which comprised the largest operations in the United States, it was surprising to learn that in general such records are not kept in workable form and some operators who do keep such records pay little attention to them. A central dispatching system is essential to an efficient trucking operation and each large operator has his own system, but without a record of the actual movements of each vehicle each day, summarized in easily readable form, it is difficult to improve the dispatching. In many cases it is the practice to have the vehicle driver keep a daily record of his movements showing the approximate time required for each movement, but with his total working time carefully calculated. The driver's card often is used in making up the payroll but rarely for checking up on vehicle performance. In place of this system it is advocated that the dispatching office keep the record of each driver's movements, the driver being required to telephone the dispatcher as soon as each destination is reached, the dispatcher then giving instructions for the next move and recording this information while he talks with the driver. The day's work of each vehicle is then easily summarized and the cost of handling any load of freight can be quickly and accurately determined, entirely aside from the effective control and administration over all vehicle operations which this plan makes possible. Such a system need not be at all expensive, a single dispatcher being able to control and record all movements for a large fleet of vehicles.

A condensed summary of vehicle performance over varying lengths of time and for different numbers of vehicles, but reduced to an 8-hour working day basis per vehicle, is also shown in analysis 106.12. It was not possible to obtain information from the other operations which were studied. In the table there is shown only one truck operation and one operation in which a tractor semitrailer combination is used instead of a truck. All other operators using trucks failed to keep performance records, the usual average performance that such operators expected to get from trucks being four loaded trips per day.

Certain statistics in the table show the comparative efficiency of the several operators. The information is arranged on the basis of the number of loaded trips per day, some operators using tractor semitrailer shuttle systems obtaining three times as many loads per day as those using trucks. However, there is a great variation in the amount of useful work done by the nine shuttle operators which is best shown by the ratio of loaded trips to total trips and loaded miles to total miles. When these ratios fall below 50 an explanation is in order. Likewise, if the ratios equal 60, with 10 or more trips and 40 or more miles per day, an efficient operation is assured. On this basis very few present day terminal trucking operations can be considered efficient.

In the following estimates of the operating cost of a tractor-semitrailer combination in container movement (analysis 106.13) certain adjustments were made to meet these departures from the average. Generally they take the form of reduced expenses resulting from the magnitude of the anticipated operation and the estimated saving in the quantity purchases made possible; but they are also reflected importantly in the reduced annual variable expense resulting from the lower than average vehicle mileage per year.

The following assumptions were made as to vehicle and load:

Maximum pay-load	25,000 lbs.
Average load when loaded	18,125 lbs.
Loaded mileage	60 percent of total
Average load throughout mileage	10,875 lbs.
Tare weight, container	3,500 lbs.
Tare weight, vehicle	13,475 lbs.
Average gross weight throughout mileage	27,850 lbs.

Gasoline and lubricating oil consumption was computed from the gross weight equations for each. The resulting 3.2 miles per gallon of gasoline and 33.1 miles per quart of oil may be adjusted by a 25 percent increase and decrease in estimating high or low consumption. A much wider range of departure from the average occurs in actual operator experience, but it is believed that such factors as improper handling of the vehicle, inadequate maintenance, faulty carburetor adjustment and other controllable factors appearing in many small operations need not be regarded in the estimate under consideration.

Gasoline at ten cents a gallon and oil at ten cents a quart, omitting the tax on each, appears to be currently available to large operations. These prices are applied to the consumption estimates above in order to arrive at the estimated cost.

Though a range in price may be anticipated between sections of the country, it is believed that the range in consumption would absorb such price range. Minimum prices cannot with assurance be applied to minimum consumption and vice versa.

Tires and Tubes. 9.75x20, 12 ply, tire prices as suggested by manufacturers, for large scale tire consumption, were assigned an average life of 25,000 miles, with high and low cost expectancies based on 20,000 and 30,000 miles respectively.

Garage Miscellaneous Expense. This item represents both labor and material costs. Labor elements would scarcely deviate from normal averages, and though fleet conditions would justify a price reduction in materials, it is quite likely that the particular operation in view would offset such a reduction by an increase in materials used. Average costs were, therefore, employed in the estimate.

Maintenance. Of the values resulting from the equation for maintenance cost, 1.16 cents per mile represents labor involved. This was retained while a 25 percent price reduction was allowed on the remaining materials costs. The resulting 3.14 cents per mile average was further corrected for high and low costs by a 25 percent deviation allowance. Such deviations are consistent with those of gasoline and oil consumption.

Vehicle Depreciation. Under normal conditions the useful life of a tractor and semitrailer of the type under consideration would average 150,000 miles for the tractor, and 250,000 miles for the semitrailer. Depreciation rates should, as a rule, vary inversely with the investment. But the costs of actual depreciation, plus maintenance, are likely to more than offset the initial investment savings where the equipment is too light, while the costs of obsolescence are likely to more than offset maintenance and depreciation savings where the equipment is too sturdy. When the vehicles average less than 60 miles of daily travel, the element of obsolescence assumes greater importance than physical deterioration and depreciation should be charged on a time basis. Seven years for the tractor applied to a price range of $4,000 to $5,000 for low and high values and to $4,500 for an average, and 15 years for the semitrailer applied to $600 and $700 for low and high and to $650 for average values, are conservative. The investment figures represent the reduced prices of quantity purchase. They represent the purchase price less tire price.

Vehicle Insurance. The following estimates, based on operator experience as well as normal rate ranges were employed in the computation of insurance cost expectancies:

Item	Minimum	Maximum
Public liability, tractor	$150.00	$250.00
Public liability, semitrailer	50.00	90.00
Property damage	75.00	150.00
Fire tractor	30.00	60.00
Fire semitrailer	5.00	10.00
Cargo	15.00	65.00
Total	$325.00	$625.00
Less 25 percent for fleet, 8.33 percent for experience	$216.67	$416.67
Estimated Range	$225.00	$425.00
Estimated Average	$325.00	

Drivers' and Helpers' Wages. Drivers' and helpers' wages, like vehicle depreciation, though normally calculable on a mileage basis, should in the low mileages under consideration be estimated on a time basis. Drivers' wages will range between $20.00 and $30.00 weekly and will average close to $25.00. Helpers' wages will vary between $14.00 and $22.00 weekly and may average $18.00. The costs of the latter were computed at one helper to every four vehicles. Employee liability insurance is assumed to be included in the estimate.

Garage Rent. Average garage rental was assumed; but a 20 percent plus and minus deviation was allowed in computation of high and low probabilities.

General Overhead and Miscellaneous. The general overhead costs not allocable to the foregoing items, will depend largely on the specific nature of the organization operating the proposed service. A reasonable allowance, slightly higher than normal operator experience, would seem to be in the neighborhood of $1,500 per vehicle as an average. A 20 percent deviation was again allowed for high and low probabilities.

Variable Fees. Because for-hire operations use the public highway or street as a place of business there is usually imposed upon them a special tax which in some way is dependent on the extent of use and will therefore vary with mileage. Added to this will be the gas tax which will range between three cents and nine cents per gallon (Federal tax included), and the Federal oil tax of one cent per quart. The normal sum of these variable tax items for an operation of this character will be in the vicinity of 2.75 cents per mile, and though a deviation of 50 percent would not be abnormal, it may be assumed that high tax regions would enjoy low labor and rental costs, and in making the estimates here this complication is avoided by merely allowing a 25 percent deviation from the average.

Licenses and Taxes, Not Variable. The heaviest part of the tax bill, under the assumed mileages, will be in the form of taxes and fees on the vehicles which are independent of mileage. For the particular vehicle combination in question $250 would appear to be representative, with a reasonable deviation allowance of 25 percent. Taxes on other property, etc., are chargeable to the particular accounts involved and do not appear in these vehicle tax estimates.

XXVIII LINE OPERATIONS

107. Elements of Line Operations

Railway

Rail line activities embrace the movement of the car between terminals and the yard handlings en route at intermediate terminals. The cost of these activities include the cost of maintaining the roadway and power employed in, as well as the movement incident to both activities, together with a proportionate share of the overhead costs. No attempt was made to distribute the cost of yardings between kinds of trains. The road expense could be and was so separated. On the whole, line expense constituted 63 percent of the total cost* and 49 percent of total revenues.# The average unit line cost per train was $232; per train hour, $51; per train mile, $3.16; per car mile, 12 cents.#

Petroleum

The total line expenses of petroleum pipe line transportation companies in 1932 amounted to 67 million dollars, all of which were allocated to conveyance costs. This is equivalent to 32 percent of the total revenue earned; and amounted to $724 per route mile of pipe line operated, 81 cents per net ton originated and 2.1 mills per net ton mile.#

108. Utilization of Line

Railway

Statistics of the composite train are shown in analyses 70.3 and 70.6. From these statistics it appears that (1) the average train run was 75 miles in 4 1/2 hours, a road speed of 16 miles per hour; (2) the average number of train miles per mile of road was 1,611 per annum or 4.4 trains per day, (2.2 trains each way)ø which means that over the country as a whole, the headway of freight trains running in the same direction averaged about 11 hours or 176 miles; (3) the heaviest train mile density was in the Pennsylvania operating district - 4 trains each way per day and the lightest in the Oregon district - 1 train each way per day.

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* Analysis 107.2.
# Analysis 107.1.
ø If the main track miles, 284 thousand (analysis 70.4) are used instead of miles of road, the trains per day per mile of main track drop to 3.8.

The foregoing statistics, however, deal with both main and branch line. If the branch line be omitted, the average run becomes 84 miles in 5 hours or 16.8 miles per hour; the train miles per mile of road, 2,070; and the trains, not quite 3 trains per day each way. The Pennsylvania district main lines (the heaviest in density) averaged 6 1/2 trains each way per day, a headway of 3 hours and 50 minutes, or 56 miles.*

The average number of loaded car miles per manifest train mile was 40; the gross load, (car tons only) 2,123 tons; the net load, 752 tons. The heaviest trains were in the Virginia (45 cars, 3,095 gross tons and 1,375 net tons) and New York districts (58 cars, 2,824 gross tons and 1,048 net tons.)#

The average drag freight train consisted of 26 loaded cars, 2,101 gross tons (car tons only) and 794 net tons. The heaviest trains were in West Virginia - 43 cars, 4,359 gross tons, and 2,244 net tons.#

109. Intermediate Yardings

Railway

Line intermediate yardings are of two kinds - reclassification, servicing or transfer between yards or between road trains of the same carrier (single carrier yardings), or the interchange between carriers, including intermediate switching where more than one interchange is involved. The number of such handlings is quite large, aggregating 105 million in 1932,ø which means that on the average each car was yarded 6 times⌿ in the average (car⌿) haul of 353 miles, or once every 70 miles. The costs do not vary greatly between territories. The average unit cost for yarding for the United States was $3.23 for all classes; $2.41 for a single carrier yarding; $4.80 for a single interchange; and $4.88 for an intermediate handling.ø

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* Exhibit 440. # Analysis 108.2.

ø Analysis 109.1.

⌿ This includes one origin and one destination yarding and an average of four intermediate yardings.

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110. Conveyance

Railway

The road cost of operating the composite train was $164; $36 per hour; $2.24 per train mile; 8 1/2 cents per car mile; 1.2 mills per gross ton mile; 1.9 mills per equated ton mile; and 3.7 mills per net ton mile.* Of the total trains operated in 1932, 25 percent were manifest trains, 25 percent drag trains, 27 percent main line way trains, and 23 percent branch line way trains.#

The reported cost of train movement per loaded car mile was not resolved into primary elements. This can be done, however, by application of the statistics of the Commission for 1932 as follows: Wages (41 percent) 1.70 cents; fuel, power, lubricants, engine supplies (29 percent) 1.20 cents; engine house (6 percent) .25 cents; train supplies (7 percent) .28 cents; dispatching and road service (8 percent) .33 cents; and supervision (9 percent) .37 cents.ø

Comparison indicates that from the standpoint of efficiency there is little choice between manifest and drag trains. In nearly every case the manifest train appears to be operated as the efficiency road unit by choice. The tonnage is kept up to the locomotive rating and a high percentage of cars are loaded. If the volume of "red ball" freight does not fill out the train, then tonnage of heavier commodities is used to fill in. This tonnage would ordinarily move in drag trains when traffic is heavy. Manifest trains seem to have replaced drag trains in many cases due to the fact that the schedule has to be maintained for time freight and that the drag tonnage used to fill in leaves little left for the drag movement.

Drag trains seem to have changed in character in that, with the exception of coal movement, they are now largely lightly loaded trains carrying most of the empty cars on the main line. Drag trains also are performing some local service which is not heavy movement.

Where drag tonnage is high, it is almost always a one direction movement and the return of empties cuts down the average loaded cars per train. This is not true of the manifest one-way movements, since the return of the empties from manifest is classed as drag service and only helps to lessen the number of loaded drag cars.

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* Analysis 107.1. # Analysis 108.3

ø Analysis 108.7. The total cost of train movement 3.32 cents has been expanded to 4.13 cents by dividing by the ratio of overhead expense (1.71 cents) total expense 8.69 cents.

The present interchangeability of road freight power is possibly due to the fact that gross tons are about equal between drag and manifest. It is then efficient practice to move the "light" cars in drag service and speed up tonnage deliveries by putting the heavy shipments in faster scheduled trains.

The average number of loaded cars in manifest trains was 40, in drag trains 26, and in main line way trains 12.* Empty cars in manifest trains averaged 31, in drag trains 26, and in main line way trains 12. Gross weight in the average manifest train was 2,123 tons, in the drag train 2,101, and in the main line way train 829; the net weight in the manifest train was 752, drag train 794, and way train 291.* The average run of the manifest train was 115 miles in 5 2/5 hours - a speed of 21 miles per hour; of the drag train 84 miles in 5 hours - a speed of 17 miles per hour; and of the way train 56 miles in 5 hours - a road speed of 12 miles per hour.# The average cost of the manifest train was $281; of the drag train $210. The average train mile road cost of the manifest train was $2.51, of the drag train $2.55, and of the main line way train $2.01. Per loaded car mile, the manifest train cost 6 cents, the drag train 10 cents and the way train 17 cents. Per net ton mile, the manifest train road cost was 3.3 mills, the drag train 3.2 mills and the way train 6.9 mills.ø

Road cost did not vary widely in different territories. The average cost per train mile (all trains) for the United States was $2.29. The territories where train mile costs were highest were Trunk Line and New England, about $3; the lowest costs were in the South, Western Trunk Line and Southwestern Territories, about $2.⌿

The loaded car mile cost for the United States was 8.7 cents. The highest cost was in New England, 10.7 cents; the lowest in Central Territory, 7.7 cents. With the exception of the Pacific Northwest (9.2 cents) the costs in all other territories were within 5 percent of the average cost.⌿ The average gross ton mile cost (all trains) was 1.2 mills. The extreme variations were Pocahontas, 1 mill; and the New England 1.7 mills. None of the other territories varied from the average by as much as 10 percent. Due to differences in traffic handled, the variations in cost per net ton mile were marked. The average (all trains) was 3.8 mills. The cost in the several territories was as follows: New England, 6.1 mills; Trunk Line, 3.6 mills; Central, 3.2 mills; Pocahontas, 2.2 mills; Southeastern, 4.1 mills; Western Trunk Line, 4.4 mills; Southwestern, 4.6 mills; Pacific Northwest, 4.7 mills; and Pacific Southwest, 5.3 mills.⌿

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* Analyses 108.2 and 111.3.
# Time of train switching eliminated. Exhibit 440.
ø Analyses 110.3, 110.4, 111.1 and exhibit 440.
⌿ Analysis 110.1.

The gross ton mile cost of manifest train service was lower than any other type of train service for the United States as a whole in all rate territories except Central and Southeastern, where the drag train cost was about 6 percent lower than manifest trains. The national average net ton mile cost of drag train service was lower than any other type of train. In three districts, Central, Pocahontas and Southeastern (due partly, it is assumed, to preponderance of coal traffic with consequent heavier car loading) the drag train costs per net ton mile were lower. In all other territories, however, it was higher, due in part to the practice of handling empty equipment in drag trains in the Western District.*

Waterway

Water carriers' line costs were divided between line station and line conveyance. Total line costs for all reporting carriers for 1932 amounted to $103,152,000 which was 78 percent of total freight expenditures. Common carriers total line expenses were $83,302,000 or 76 percent of their total freight expenditures, and other carriers spent $19,850,000 or 91 percent of their total freight expenses for line costs.#

By districts and by classes of carrier line expenditures and percentages of total freight expenses for 1932 were - Atlantic Coast common $15,708,000 or 67 percent, others $3,885,000 or 90 percent; Atlantic Gulf common $11,832,000 or 78 percent, others $989,000 or 99 percent; Intercoastal common $34,029,000 or 81 percent, others $233,000 or 73 percent; Inland Waterways common $5,159,000 or 63 percent, others $446,000 or 94 percent; Great Lakes common $6,675,000 or 80 percent, others $13,639,000 or 90 percent; and Pacific Coast common $9,898,000 or 81 percent; others $658,000 or 86 percent.#

Line station expenses for all reporting carriers for 1932 amounted to $2,516,000 or 1.9 percent of total freight expenditures and 2.4 percent of total line expenses. Common carriers spent $2,383,000 or 2.2 percent of their total freight and 2.9 percent of their total line expenditures for line station items, and for other carriers similar figures were $133,000 or .6 percent and .7 percent.#

Line station expenses for 1932 by districts and by classes of carriers and percentages of total freight expenditures and total line expenses were - Atlantic Coast common $351,000 or 1.5 percent and 2.2 percent, others $80,000 or 1.9 percent and 2.1 percent; Atlantic Gulf common $1,002,000 or 6.6 percent and 8.5 percent; Intercoastal common $462,000 or 1.1 percent and 1.4 percent, others $26,000 or 8.2 percent and 11.2 percent; Inland Waterways common $223,000 or 2.7 percent and 4.3 percent, others $1,000 or .2 percent and .2 percent; Great Lakes common $143,000 or 1.7 percent and 2.1 percent, others $26,000 or .2 percent and .2 percent; and Pacific Coast common $202,000 or 1.6 percent and 2 percent.#

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* Analyses 110.3 and 110.4.
# Analysis 107.3.

Line conveyance expenses for all reporting water carriers in 1932 amounted to $100,636,000 or 77 percent of their total freight expenditures and 98 percent of their total line expenses. For common carriers similar figures were $80,920,000 or 74 percent and 97 percent, and for other carriers they were $19,716,000 or 90 percent and 99 percent.*

By districts and by classes of carriers, line conveyance expenses and percentages of total freight expenditures and total line expenses, respectively, for the year 1932 were - Atlantic Coast common $15,357,000 or 66 percent and 98 percent, others $3,805,000 or 89 percent and 98 percent; Atlantic Gulf common $10,831,000 or 71 percent and 92 percent, others $989,000 or 99 percent and 100 percent; Intercoastal common $33,567,000 or 79 percent and 99 percent, others $207,000 or 65 percent and 89 percent; Inland Waterways common $4,936,000 or 61 percent and 96 percent, others $445,000 or 94 percent and 99 percent; Great Lakes common $6,532,000 or 78 percent and 98 percent, others $13,613,000 or 90 percent and 99 percent; and Pacific Coast common $9,697,000 or 79 percent and 98 percent, others $658,000 or 86 percent and 100 percent.*

111. Distribution Operations

Railway

Rail distribution service is defined in the survey as the service by way freight trains. These trains are of two classes, those operated on main lines and those operated on branch lines - the latter comprising lines over which only way freight train service is customarily operated.

Train analysis indicates that these trains carried (for relatively short distances) a substantial part of the total traffic. The branch line trains handled 300 million net tons, that is, they either originated, terminated or intermediately handled that amount. The extent of the duplication is unknown but in the nature of things is not believed to be large. The main line way trains handled 489 million net tons.# It would seem therefore that the composite railway ton was either originated or terminated by a way freight train, main or branch, inasmuch as the total rail tonnage originated amounted to 646 million tons.

The average haul on main line way trains was 56 miles∅ and on branch lines, 37 miles.⌿ The ton miles of the former amount to only 10 percent, and the latter, only 4 percent of the total net ton miles.**

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* Analysis 107.3.
# Analyses 111.1 and 111.2.
∅ Analyses 108.3 and 111.1 (train miles divided by trains).
⌿ Analyses 108.3 and 111.2 (train miles divided by trains).
** Analyses 111.1, 111.2, 67.1.

Of the 243 thousand miles of road operated in 1932 by the reporting carriers, 76,000 or 31 percent were lines over which only local service, freight and passenger, was regularly operated which are denominated "branch lines."* The ratio of branch lines to total mileage is about the same as the national average in all territories, except Central, 15 percent; Pocahontas, 18 percent; Western Trunk Line, 40 percent; and Pacific Northwest 43 percent.# About 23 percent of the freight train runs were on branch lines,∅ but only 12 percent of the train miles, 3 percent of the loaded car miles, and 4 percent of the net ton miles.⌿

Mainline way freight trains accounted for 27 percent of all trains, 21 percent of all train miles,∅ and 18 percent of total road costs. Branch line freight train costs were 9 percent of total road costs. The road cost was 63 cents per net ton handled in through trains for an average haul of 100 miles, road cost in way trains was 31 cents per net ton handled for an average haul of 47 miles.**

The composite main line way freight consisted of 13 loads and 12 empties. Its car tonnage was 829 tons, its net tonnage 291 tons.## Its average road cost per train mile was $2.02 per loaded car mile 17 cents, and per net ton mile, 7 mills.∅∅

The composite branch line had an average of 3/4 of a train each way per day. It consisted of 8 loads and 6 empties. Its car tonnage was slightly over 500 tons, its net load just under 200 tons. Its average run was only 37 miles, the running time of which was 3 hours⌿⌿ - a running speed of 12 miles per hour. The average road cost per train was $67; $1.82 per train mile; 24 cents per car mile; 3.6 mills per car ton mile; and 9.4 mills per net ton mile. It was the cheapest train but the most expensive service. The road cost in terms of revenue units (loaded cars or net ton miles) was nearly three times the road cost of the average main-line train. In one out of nine rate territories and in ten out of forty-eight operating districts, the average road cost per car mile was in excess of 30 cents and in a number of them in excess of 40 cents. The average way train, judged from test analyses, handled a preponderance of low grade traffic, the average consist being 4 percent cotton, hay and tobacco; 14 percent coal; 15 percent sand, stone and gravel; 6 percent petroleum; and 13 percent forest products. 18 percent were l.c.l. cars.**

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* Analysis 70.5.
∅ Analysis-108.3.
** Exhibit 440.
∅∅ Analyses 111.1 and 111.4.
⌿⌿ Exclusive of train switching.
# Analysis 70.5.
⌿ Analyses 67.1 and 111.2.
## Analysis 111.3.

XXIX INTEGRATED MOVEMENT

112. Problem of Integrated Movement

113. Instrument Utility

Railway

The rail cost of performing terminal service for average car amounts to $26.84 in the origin and destination terminals* and $12.49 in the intermediate terminals - a total of $39.33 per car or $1.65 per ton,# and if intermediate yardings be excluded, $1.13 per ton.*

The rail cost of line movement, excluding intermediate yardings, but including the cost of all functions, is 9 cents per loaded car mile or 4 mills per net ton mile. If intermediate yardings be included, the rail cost per car mile is 12 cents and per ton mile, 5 mills.ø

The cost of cargo train service can be approximated. The total present main line road cost of 3.6 mills per net ton mile/ understates the cost to the extent that expenses common to road and yard cannot be reduced proportionately to the reduction in the amount of yard operations but overstates it in that this cost relates to an average train load of only 660 net tons,** whereas the train load of a cargo train might well be four or five times that much.

In the Pocahontas region as a whole and on individual railways or parts of railways in other sections, the potentialities of cargo trains have been realized more nearly than generally is true in operations as a whole. The net tons per train mile in Pocahontas Territory were over twice the average of the country as a whole and in drag freight trains the ratio was nearly three times that for the country.## Taking operations as a whole, the Pocahontas conveyance cost per net ton mile was 2.2 mills, the intermediate yardings .7 mill and station .1 mill, a total of 3 mills, whereas the average cost for the country as a whole was 5.3 mills or over 50 percent greater.øø The drag freight train in the Pocahontas region was still lower, its road conveyance cost being 1.9 mills per net ton mile compared with the national average of 3.2 mills.// The data indicate that a full tonnage cargo train moving from a single origin track to a single destination industry track without breaking the train line would do so at a line cost of less than 2 mills per net ton mile, or below the average cost of pipe line transportation. This train also would eliminate practically all terminal operations and expense. While the cost of this character of rail operation is higher than the cost of cargo water carriers, it is lower than any form of land transportation.

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* Analysis 106.4. # Analysis 104.1. ø Analysis 107.1.
/ Analysis 110.2.
** Exhibit 440 (net ton miles divided by train miles).
Exhibit 440. øø Analysis 107.2. // Analysis 110.4.

Analyses 108.8 and 81.4 to 81.6 show the line cost per loaded car mile and per net ton mile of the four types of trains operated with that of power unit cars submitted by a number of leading manufacturers. These cars are motor units - Diesel-mechanical, Diesel-electric and steam types are each represented which are designed to carry 3 to 5 containers on the power car and to trail 1 to 4 trailers at a road speed of 50 miles per hour on level tangent track. All line costs were deemed constant to both types of operation except power maintenance, depreciation, locomotive care, fuel, water and similar supplies, and crew wages. The latter were calculated at $20 per crew day with an average mileage of 150 miles. This crew mileage is higher than that of present conventional freight trains but lower than justified by the type of operation, since on the average it would mean about 4 hours' work. A reasonable mileage would be about 250 miles or about 6 hours' work. In computing car mileage, 60 percent was deemed loaded and 40 percent empty and similar ratios were used in computing ton mileage.

The analysis also shows similar information with respect to light power locomotives for trains of from 4 to 12 cars. The submissions show, almost without exception, that the manufacturers claim to be ready to produce a type of light train which will offer a transportation service on carload freight at express train speed, without terminal delays and at a cost substantially less than the cost of conventional trains.*

Highway

Separating the overall cost of the integrated highway movement between line and terminal upon the basis of studies of truck terminal operations alone, reveals a truck terminal cost varying from 90 cents per ton with a 3-ton load to 28 cents per ton with a 20-ton load, the average (10-ton load) being 41 cents.# The foregoing costs are for fully loaded movements. If an average loaded movement of 60 percent be assumed, the average truck terminal cost rises from 41 cents to about 70 cents per ton, or nearly $1 per ton less than rail yard cost and 43 cents less than rail terminal cost.

The line cost of a fully loaded truck movement with an average load of 10 tons is about 27 mills per net ton mile and of the most economical load, 20 tons, about 18 mills per net ton mile.

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* The total cost per net ton mile produced by each of these submissions, except a more or less convential steam locomotive is less than the comparable cost of either type of way train since 12 submissions show average cost the same or lower than that of the average manifest or drag train, 16 lower than the average of all trains and only 6 equaling the average of all trains.

# Analysis 49.7.

If these two instrumentalities continue to be operated competitively with one another, allowing an average load of 10 tons per truck, and an average line cost of 5.3 mills per net ton mile by rail*, we find that the truck advantage of 43 cents per ton in the terminal will be overcome by rail superiority on the line in about 20 miles.

The cost of handling and rehandling can be eliminated either through the use of containers or by transporting semitrailers the whole distance from origin to destination by highway, water, rail, or any combination of these three, the container being the efficient medium for such coordinated transportation.

Such a plan would relieve the carload shipper of the necessity of making minimum carload weights, the containers recommended being 10 feet and 24 feet long, having a capacity of from one-fifth to one-half a carload, carrying a maximum payload of 25,000 pounds, in a body readily transferable between highway vehicles, shippers' platforms, railroad cars, and boats. Present highway equipment, trucks, trailers, and semitrailers, can be equipped for the container service at a cost of a few hundred dollars per vehicle, although specially designed semitrailers costing but little more than present vehicles would prove advantageous. The highway operator possesses the motive power and would be responsible for all transfers of containers between railroad cars and highway vehicles.

The ultimate traffic to be moved in terminal areas by highway vehicle would be carload freight. A terminal area may easily embrace a loaded haul of 25 miles although the average loaded haul would probably not exceed 4 miles in large terminals. In addition highway vehicles would have an active field of service replacing branch line haul of carload freight for distances up to 50 miles and in distributing carload freight in lieu of mainline trains for distances of 30 miles or more, in many sections of the United States. Stimulation of quantity movements of commodities which now do not move in commerce at all would likewise result, the highway vehicle operating in single units being easily capable of reaching farms and small communities which lack other transportation facilities. A comparison of highway container service with way train, main line and branch line service is shown in analyses 115.1 and 115.2, which give an idea of the extent of this field.

Trucks generally render a much speedier service in terminal areas than is possible by switching of cars. By substituting demountable container bodies for the present large capacity car bodies and letting highway vehicles do the complete terminal job, taking containers from the road train, making delivery, and returning empty containers to the road trains, coordination of railway and highway service is brought about, and the shipper gets not only the quantity of goods desired but speedy service as well. The railroad train has inherent advantages both in speed and economy over the highway vehicle for the line-haul movement, but the reverse is true in terminal movement. The increase in speed effected by using highway service for terminal collection and delivery of container load lots in lieu of present railroad carlot service is indicated in analysis 21.1. Under such an arrangement the highway vehicle and the railroad train become partners instead of competitors, the demountable container body, which travels with equal facility on either vehicle, being the key to the solution.

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* Analysis 107.1.

XXX INTERCARRIER OPERATIONS

114. Necessity for Interchange

115. Routing Privileges

116. Cost of Intercarrier Operations

Shipper

The shippers also answered fully the question about nature and extent of the traffic service which they received. This information is shown in analyses 115.1 and 115.2. In the former the questions have been tallied by the percentage relationship of replies to the total number of shippers replying to the questionnaire; in the latter, in accordance with the number of tons by all agencies shipped by the respondents.

It appears that 26 percent of the shippers in number, representing 68 percent of the tonnage reported, obtained traffic service from their own traffic departments; 26 percent in number, representing 13 percent of the tonnage, from firm officers who performed other duties; 61 percent in number, representing 18 percent of the tonnage, did not have any traffic service but relied entirely on railway officers or agents.

With respect to solicitation, 57 percent of the shippers, representing 80 percent of the tonnage, were solicited by off line commercial agents; 36 percent of the number, representing 65 percent of the tonnage, reported that off line solicitation was helpful; 23 percent of the number, representing 42 percent of the tonnage, that such solicitation affected routing. Only 21 percent of the shippers in number, representing but 9 percent of the tonnage, thought off line solicitation was useless.

Off line solicitation evidently is not of great importance from a service standpoint. Of the total shippers, 11 percent in number, representing 26 percent of the tonnage, reported that they obtained information about rates, classifications, etc., from off line officers; 17 percent in number, representing 36 percent of the tonnage, that they received from such officers information about schedules, service, etc.; 20 percent of the number, representing 43 percent of the tonnage, that they were helped in tracing shipments by off line agencies.

Twenty-two percent of the shippers in number, representing 27 percent of the tonnage, reported that routing was largely influenced by solicitation. Only 11 percent in both number and tonnage reported that routing was largely influenced by friendship; 11 percent in number, representing 32 percent of the tonnage, reported that it was necessary to control reconsignments; while 63 percent in number, representing 71 percent in tonnage, that it was used to compel good service. Only 17 percent in number, representing only 4 percent in tonnage, reported that the routing privilege was not of substantial value.

Railway

In 1932 there were 50 million interchange handlings* (2,600 thousand of which involved an intermediate switch line) at an average cost of $6.51 each#, producing a total cost of 325 million dollars. Reduced to an interchange basis, that is, counting as a single transaction all switching operations necessary to interchange a car from one road-haul carrier to another or between the road-haul carrier and the initial or final terminal switching lines, there were 24 million interchanges, entailing an average cost of $10.78 each. Confining the cost to the intercarrier cars alone (10,556 thousand) it averaged $30.80 per car originated.ø

The cost per interchange handling varied but little between the three districts but considerably between territories. The lowest cost was in New England, $4.10; the highest in the Pacific Northwest, $11.71. The lowest cost per car interchange was $7.04 in New England Territory; the highest $15.00 in Pacific Northwest Territory.#

117. Minimization

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* Counting each handling by each carrier.

# Analysis 116.3.

ø Total cars originated 27,147,000 (analysis 67.1), less local carloads 8,867,000 (exhibit 110) and local l.c.l. cars 7,724,000, leaves 10,556,000 intercarrier cars originated. Local l.c.l. cars were determined as follows: Total l.c.l. cars loaded on line 9,079,000 (exhibit 112D Section 1, Merchandise Traffic Report), less interline l.c.l. cars 1,355,000 (Note 224, page 14, Merchandise Traffic Report).

Volume 3

FEDERAL COORDINATOR OF TRANSPORTATION

FREIGHT TRAFFIC REPORT

STATISTICAL ANALYSES

VOLUME III

Section of Transportation Service

Business

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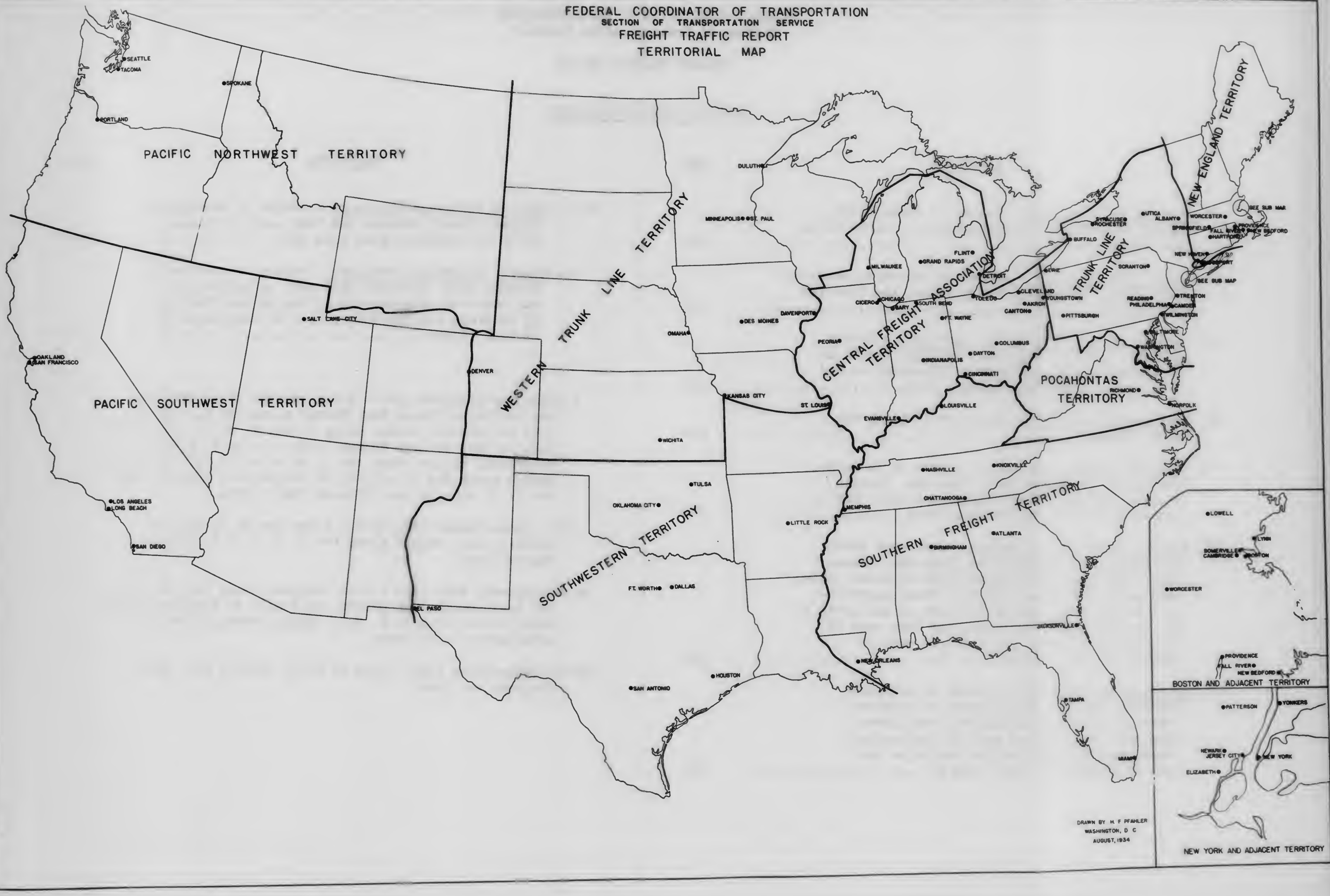
v.3

FEDERAL COORDINATOR OF TRANSPORTATION
SECTION OF TRANSPORTATION SERVICE
FREIGHT TRAFFIC REPORT
TERRITORIAL MAP



DRAWN BY H F PFAHLER
WASHINGTON, D C
AUGUST, 1934

FEDERAL COORDINATOR OF TRANSPORTATION
Section of Transportation Service

FREIGHT TRAFFIC REPORT

CODES OF RATE TERRITORIES

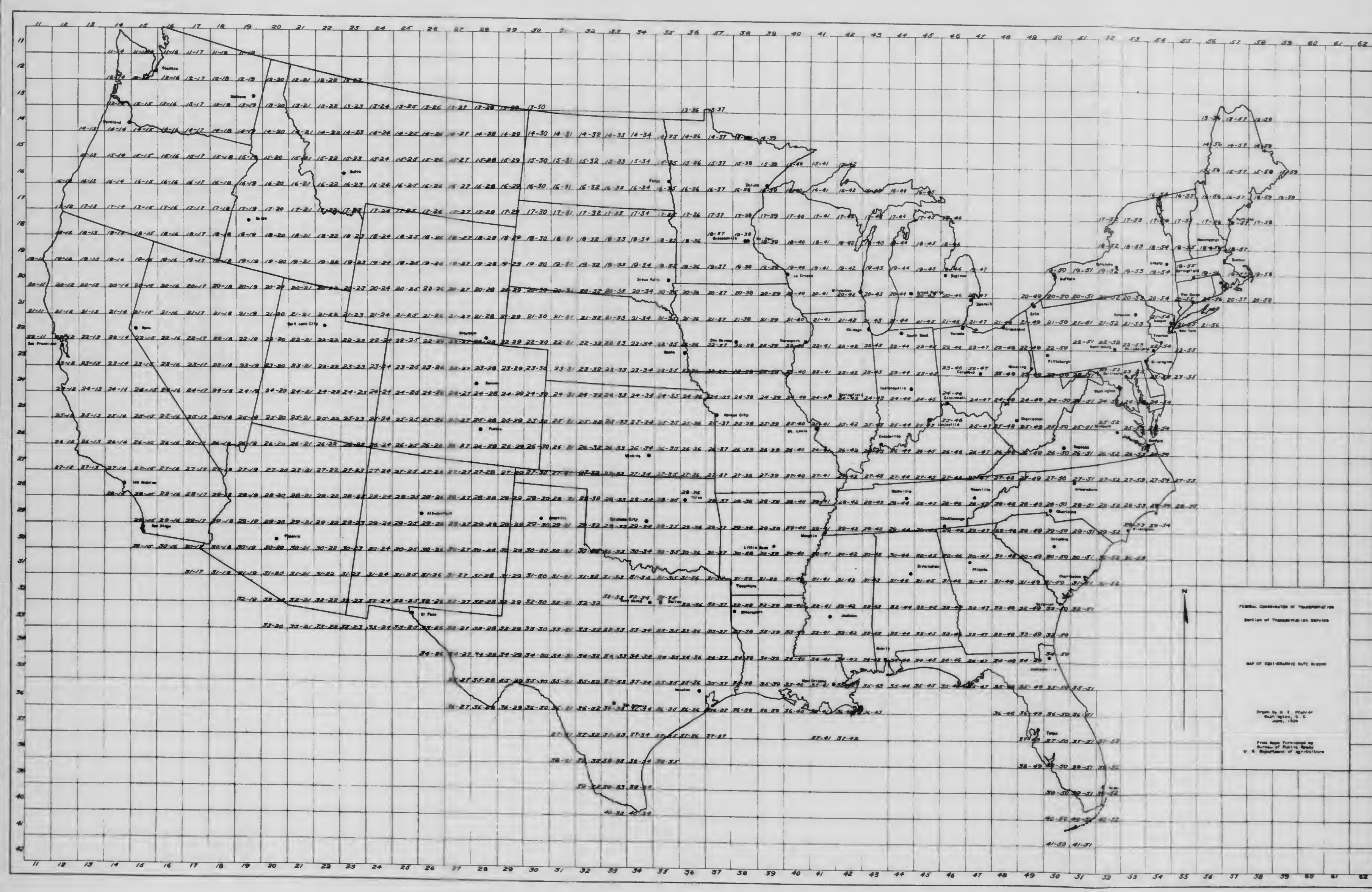
Territory	Code
I. New England Territory - States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont	100
II. Trunk Line Territory - States of Delaware, Maryland, New Jersey, New York, Pennsylvania, and District of Columbia	200
III. Central Freight Association Territory - States of Ohio, Indiana, Illinois, Michigan (South of Great Lakes) and that part of Wisconsin on and east of the Green Bay-Freeport line. #	300
IV. Pocahontas Territory - States of Virginia and West Virginia	400
V. Southern Freight Territory - States of Kentucky, Tennessee, North and South Carolina, Georgia, Florida, Alabama, Mississippi, and that part of Louisiana east of Mississippi River	500
VI. Western Trunk Line Territory - States of North and South Dakota, Minnesota, Nebraska, Kansas, Iowa, that part of Michigan north of Great Lakes, that part of Wisconsin west of Green Bay-Freeport line#, that part of Missouri on and north of St. Louis-Kansas City line*, and that part of Wyoming and Colorado on south and east of Cheyenne-El Paso line##	600
VII. Southwestern Territory - States of Arkansas, Oklahoma, Texas, and that part of Missouri south of the St. Louis-Kansas City line*; that part of Louisiana west of Mississippi River, and that part of New Mexico on and east of Cheyenne-El Paso line ##	700
VIII. Pacific Northwest Territory - States of Washington, Oregon, Idaho, Montana and that part of Wyoming north of Cheyenne-Ogden line ###	800
IX. Pacific Southwest Territory - States of California, Nevada, Utah, Arizona, that part of Wyoming on and south of Cheyenne-Ogden line### and that part of Colorado and New Mexico west of the Cheyenne-El Paso line##	900

# Green Bay-Freeport line - Along western shore of Green Bay to City of Green Bay, thence along the C. & N. W. R.R. to Menesha, thence along M. St. P. and S. Ste. Marie R.R. to Fond du Lac, thence along C. & N. W. R.R. to Watertown, thence along the C. M. & St. P. R.R. to Madison, thence along the C. & N. W. to Dodgeville, thence along the I. C. R.R. to the Illinois State Line.

* St. Louis-Kansas City Line - Along the M. P. R.R. to Labadie, Mo., thence along the C. R. I. & P. R.R. to Kansas City.

Cheyenne-El Paso Line - From Cheyenne along the Colorado and Southern through Denver and Pueblo to Trinidad, thence along the A. T. & S. F. R.R. through Raton, Santa Fe, Albuquerque to El Paso.

Cheyenne-Ogden Line - Line of Union Pacific R.R. from Cheyenne to Ogden.



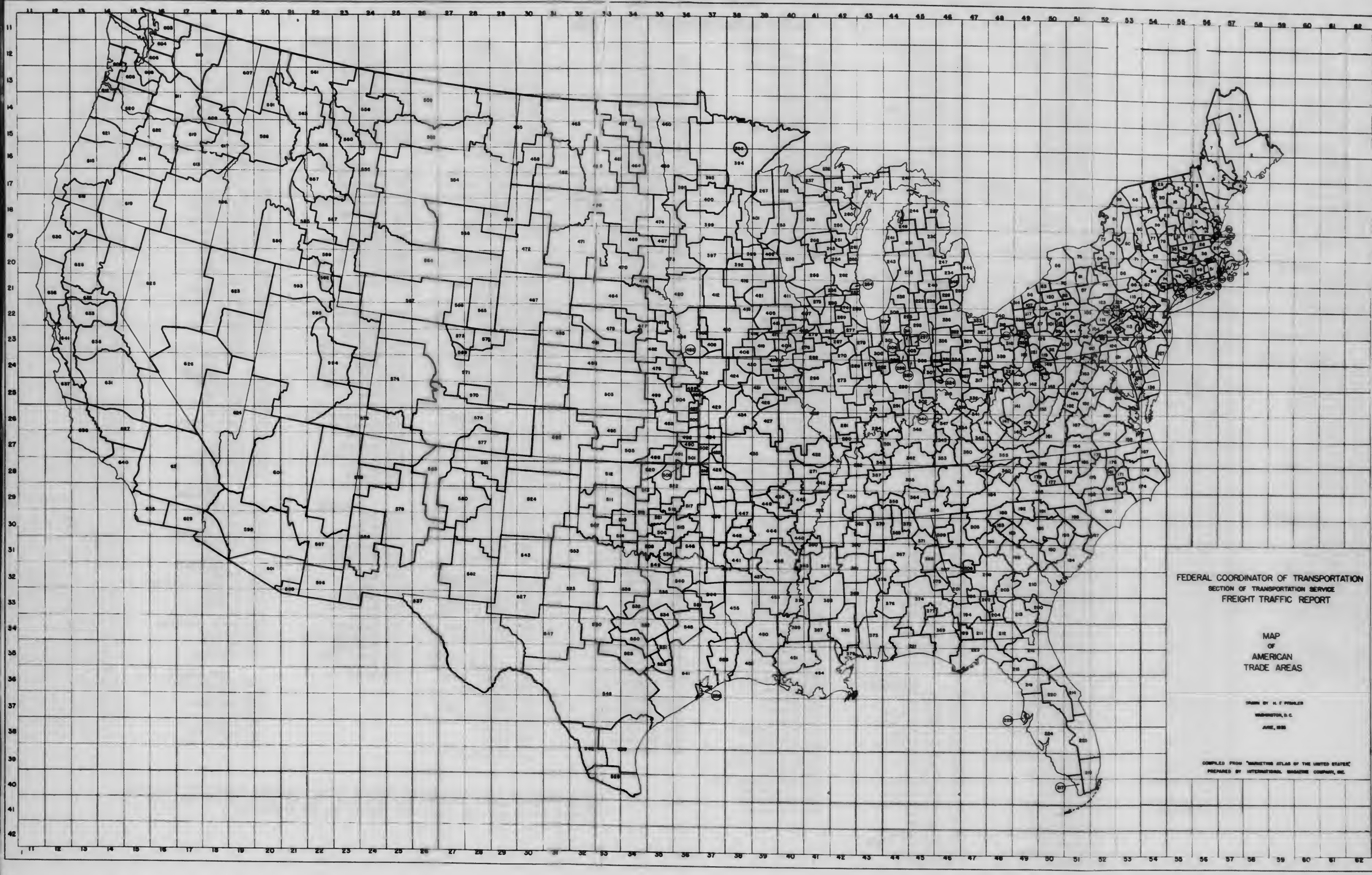
FEDERAL COORDINATOR OF TRANSPORTATION

Section of Transportation Service

MAP OF EQUI-GRAPHIC RATE BLOCKS

Drawn by H. F. Pfahler
Washington, D. C
June, 1934

From Maps Furnished by
Bureau of Public Roads
U. S. Department of Agriculture



FEDERAL COORDINATOR OF TRANSPORTATION
SECTION OF TRANSPORTATION SERVICE
FREIGHT TRAFFIC REPORT

MAP
OF
AMERICAN
TRADE AREAS

DRAWN BY H. F. [illegible]
WASHINGTON, D.C.
JUNE, 1935

COMPILED FROM "MARKETING ATLAS OF THE UNITED STATES"
PREPARED BY INTERNATIONAL MAGAZINE COMPANY, INC.

FEDERAL COORDINATOR OF TRANSPORTATION
Section of Transportation Service

FREIGHT TRAFFIC REPORT

TRADING CENTERS OF AMERICAN TRADE AREAS

MAINE
1 Augusta
2 Bangor
3 Houlton
4 Lewiston
5 Portland
6 Rockland
7 Waterville

NEW HAMPSHIRE
8 Berlin
9 Concord
10 Dover
11 Keene
12 Laconia
13 Lebanon
14 Manchester
15 Nashua
16 Portsmouth
17 Rochester

VERMONT
18 Barre
19 Bennington
20 Burlington
21 Brattleboro
22 Rutland
23 St. Albans
24 St. Johnsbury

MASSACHUSETTS
25 Boston
26 Brockton
27 Fall River
28 Fitchburg
29 Greenfield
30 Haverhill
31 Holyoke
32 Lawrence
33 Lowell
34 New Bedford
35 North Adams
36 Pittsfield
37 Springfield
38 Worcester

CONNECTICUT
39 Bridgeport
40 Danbury
41 Hartford
42 Meriden
43 New Britain
44 New Haven
45 New London
46 Norwalk
47 Norwich
48 Waterbury
49 Willimantic

RHODE ISLAND
50 Newport
51 Providence
52 Woonsocket

NEW YORK
53 Albany
54 Auburn
55 Binghamton
56 Buffalo
57 Corning
58 Elmira
59 Glens Falls
60 Gloversville
61 Hornell
62 Ithaca
63 Jamestown
64 Kingston
65 Little Falls
66 Malone
67 Middletown
68 Newburgh
69 Ogdensburg
70 Olean
71 Oneonta
72 Oswego
73 Plattsburg
74 Poughkeepsie
75 Rochester
76 Rome
77 Schenectady
78 Syracuse
79 Troy
80 Utica
81 Watertown
82 New York City

PENNSYLVANIA
83 Allentown
84 Altoona
85 Bethlehem
86 Bradford
87 Butler
88 Carbondale
89 Carlisle
90 Chambersburg
91 Clearfield
92 Connellsville
93 Du Bois
94 Easton
95 Erie
96 Harrisburg
97 Hazelton
98 Huntington
99 Indiana
100 Johnstown
101 Kittanning
102 Lancaster
103 Lebanon
104 Lewiston
105 Lock Haven
106 Mahanoy City
107 Meadville
108 New Castle
109 Oil City
110 Pottstown
111 Pottsville
112 Punxsutawney
113 Reading
114 St. Marys
115 Scranton
116 Shamokin
117 Sharon
118 Sunbury
119 Uniontown
120 Warren
121 Washington
122 Wilkes-Barre
123 Williamsport
124 York
125 Philadelphia
126 Pittsburgh

NEW JERSEY
127 Atlantic City
128 Asbury Park
129 Dover
130 Trenton

MARYLAND
131 Baltimore
132 Cambridge
133 Cumberland
134 Frederick
135 Hagerstown
136 Salisbury

DISTRICT OF COLUMBIA
137 Washington

DELAWARE
138 Wilmington

WEST VIRGINIA
139 Beckley
140 Bluefield
141 Charleston
142 Clarksburg
143 Elkins
144 Fairmont
145 Grafton
146 Huntington
147 Logan
148 Martinsburg
149 Morgantown
150 Parkersburg
151 Wheeling

VIRGINIA
152 Charlottesville
153 Covington
154 Danville
155 Fredericksburg
156 Harrisburg
157 Lynchburg
158 Norfolk
159 Petersburg
160 Richmond
161 Roanoke
162 Staunton
163 Winchester

NORTH CAROLINA
164 Asheville
165 Charlotte
166 Durham
167 Elizabeth City
168 Fayetteville
169 Goldsboro
170 Greensboro
171 Greenville
172 Henderson
173 Kinston
174 New Bern
175 Raleigh
176 Rocky Mount
177 Salisbury
178 Statesville
179 Washington
180 Wilmington
181 Wilson
182 Winston Salem

SOUTH CAROLINA
183 Anderson
184 Charleston
185 Columbia
186 Florence
187 Georgetown
188 Greenville
189 Greenwood
190 Orangeburg
191 Rock Hill
192 Spartanburg
193 Sumter

GEORGIA
194 Albany
195 Americus
196 Athens
197 Atlanta
198 Augusta
199 Bainbridge
200 Brunswick
201 Columbus
202 Cordele
203 Dublin
204 Fitzgerald
205 Gainesville
206 Griffin
207 LaGrange
208 Macon
209 Rome
210 Savannah
211 Thomasville
212 Valdosta
213 Waycross

FLORIDA
214 Daytona Beach
215 Gainesville
216 Jacksonville
217 Key West
218 Maimi
219 Ocala
220 Orlando
221 Pensacola
222 St. Petersburg
223 Tallahassee
224 Tampa
225 West Palm Beach

MICHIGAN
226 Adrian
227 Alpena
228 Ann Harbor
229 Battle Creek
230 Bay City
231 Cadillac
232 Calumet
233 Escanaba
234 Flint
235 Grand Rapids
236 Iron Mountain
237 Ironwood
238 Jackson
239 Kalamazoo
240 Lansing
241 Manistee
242 Marquette
243 Muskegon
244 Petoskey
245 Pontiac
246 Port Huron
247 Saginaw
248 Saulte Ste Marie
249 Traverse City
250 Detroit

WISCONSIN
251 Appleton
252 Ashland
253 Eau Claire
254 Fon du Lac
255 Green Bay
256 Janesville
257 Kenosha
258 LaCrosse
259 Madison
260 Marinette
261 Manitowoc
262 Milwaukee
263 Oshkosh
264 Racine
265 Sheboygan
266 Stevens Point
267 Superior
268 Wausau

ILLINOIS
269 Aurora
270 Bloomington
271 Cairo
272 Danville
273 Decatur
274 Elgin
275 Freeport
276 Galesburg
277 Joliet
278 Kankakee
279 Kewanee
280 Marion
281 Mount Vernon
282 Peoria
283 Peru
284 Quincy
285 Rockford
286 Springfield
287 Streator
288 Urbana
289 Chicago

INDIANA
290 Anderson
291 Bedford
292 Crawfordsville
293 Elkhart
294 Evansville
295 Fort Wayne
296 Frankfort
297 Huntington
298 Indianapolis
299 Kokomo
300 LaFayette
301 Logansport
302 Madison
303 Marion
304 Michigan City
305 Muncie
306 Peru
307 Richmond
308 South Bend
309 Terre Haute
310 Vincennes
311 Wabash

OHIO
312 Akron
313 Alliance
314 Ashtabula
315 Athens
316 Canton
317 Chillicothe
318 Cincinnati
319 Columbus
320 Dayton
321 East Liverpool
322 Findlay
323 Greenville
324 Hamilton
325 Lancaster
326 Lima
327 Mansfield
328 Marietta
329 Marion
330 Newark
331 Piqua
332 Portsmouth
333 Sandusky
334 Springfield
335 Steubenville
336 Toledo
337 Washington C.H.
338 Youngstown
339 Zanesville
340 Cleveland

KENTUCKY
341 Ashland
342 Bowling Green
343 Danville
344 Frankfort
345 Hazard
346 Hopkinsville
347 Lexington
348 Louisville
349 Maysville
350 Middlesboro
351 Owensboro
352 Paducah
353 Somerset
354 Winchester

TENNESSEE
355 Bristol
356 Chattanooga
357 Clarksville
358 Columbia
359 Jackson
360 Johnson City
361 Knoxville
362 Memphis
363 Morristown
364 Murfreesboro
365 Nashville

ALABAMA
366 Anniston
367 Birmingham
368 Decatur
369 Dothan
370 Florence
371 Gadsden
372 Huntsville
373 Mobile
374 Montgomery
375 Opelika
376 Selma
377 Troy
378 Tuscaloosa

MISSISSIPPI
379 Biloxi
380 Clarksdale
381 Columbus
382 Corinth
383 Greenville
384 Greenwood
385 Hattiesburg
386 Jackson
387 McComb
388 Meridian
389 Natchez
390 Tupelo
391 Vicksburg

MINNESOTA
392 Albert Lea
393 Brainerd
394 Duluth
395 Fergus Falls
396 Hibbing
397 Mankato
398 Minneapolis
399 Rochester
400 St. Cloud
401 St. Paul
402 Winona

IOWA
403 Atlantic
404 Burlington
405 Cedar Rapids
406 Centerville
407 Clinton
408 Creston
409 Davenport
410 Des Moines
411 Dubuque
412 Fort Dodge
413 Iowa City
414 Keokuk
415 Marshalltown
416 Mason City
417 Muscatine
418 Oskaloosa
419 Ottumwa
420 Sioux City
421 Waterloo

MISSOURI
422 Cape Girardeau
423 Carthage
424 Chillicothe
425 Columbia
426 Hannibal
427 Jefferson City
428 Joplin
429 Kansas City
430 Kirksville
431 Moberly
432 St. Joseph
433 St. Louis
434 Sedalia
435 Springfield

ARKANSAS
436 Batesville
437 El Dorado
438 Fayetteville
439 Fort Smith
440 Helena
441 Hope
442 Hot Springs
443 Jonesboro
444 Little Rock
445 Paragould
446 Pine Bluff
447 Russellville
448 Searcy
449 Texarkana

LOUISIANA
450 Alexandria
451 Baton Rouge
452 Lake Charles
453 Monroe
454 New Orleans
455 Shreveport

NORTH DAKOTA
456 Bismark
457 Devils Lake
458 Dickinson
459 Fargo
460 Grand Forks
461 Jamestown
462 Mandan
463 Minot
464 Valley City
465 Williston

SOUTH DAKOTA
466 Aberdeen
467 Brookings
468 Deadwood
469 Huron
470 Mitchell
471 Pierre
472 Rapid City
473 Sioux City
474 Watertown
475 Yankton

NEBRASKA
476 Beatrice
477 Columbus
478 Fremont
479 Grand Island
480 Hastings
481 Kearney
482 Lincoln
483 Nebraska City
484 Norfolk
485 North Platte
486 Omaha
487 Scottsbluff

KANSAS
488 Arkansas City
489 Atchison
490 Chanute
491 Coffeyville
492 Dodge City
493 Emporia
494 Fort Scott
495 Hutchinson
496 Iola
497 Lawrence
498 Leavenworth
499 Manhattan
500 Ottawa
501 Parsons
502 Pittsburg
503 Salina
504 Topeka
505 Wichita

OKLAHOMA
506 Ada
507 Altus
508 Ardmore
509 Bartlesville
510 Chickasha
511 El Reno
512 Enid
513 Guthrie
514 Lawton
515 McAlester
516 Miami
517 Muskogee
518 Oklahoma City
519 Okmulgee
520 Ponca City
521 Shawnee
522 Tulsa

TEXAS
523 Abilene
524 Amarillo
525 Austin
526 Beaumont
527 Big Spring
528 Brenham
529 Brownsville
530 Brownwood
531 Bryan
532 Clebourne
533 Corpus Christi
534 Corsicana
535 Dallas
536 Denison
537 El Paso
538 Fort Worth
539 Galveston
540 Greenville
541 Houston
542 Laredo
543 Lubbock
544 Marshall
545 Palestine
546 Paris
547 San Angelo
548 San Antonio
549 Sherman
550 Temple
551 Tyler
552 Waco
553 Wichita Falls

MONTANA
554 Billings
555 Bozeman
556 Butte
557 Dillon
558 Great Falls
559 Havre
560 Helena
561 Kalispell
562 Lewistown
563 Missoula

WYOMING
564 Casper
565 Cheyenne
566 Laramie
567 Rock Springs
568 Sheridan

COLORADO
569 Boulder
570 Colorado Springs
571 Denver
572 Durango
573 Fort Collins
574 Grand Junction
575 Greeley
576 Pueblo
577 Trinidad

NEW MEXICO
578 Albuquerque
579 Gallup
580 Las Vegas
581 Raton
582 Roswell
583 Santa Fe
584 Silver City

IDAHO
585 Blackfoot
586 Boise
587 Idaho Falls
588 Lewiston
589 Pocatello
590 Twin Falls
591 Wallace

UTAH
592 Logan
593 Ogden
594 Provo
595 Salt Lake City

ARIZONA
596 Douglas
597 Globe
598 Nogales
599 Phoenix
600 Prescott
601 Tucson

WASHINGTON
602 Aberdeen
603 Bellingham
604 Everett
605 Olympia
606 Seattle
607 Spokane
608 Tacoma
609 Walla Walla
610 Wenatchee
611 Yakima

OREGON
612 Astoria
613 Baker
614 Bend
615 Eugene
616 Klamath Falls
617 LaGrande
618 Medford
619 Pendleton
620 Portland
621 Salem
622 The Dalles

NEVADA
623 Elko
624 Las Vegas
625 Reno
626 Tonopah

CALIFORNIA
627 Bakersfield
628 Chico
629 El Centro
630 Eureka
631 Fresno
632 Marysville
633 Sacramento
634 San Bernardino
635 San Diego
636 Santa Barbara
637 Santa Cruz
638 Santa Rosa
639 Stockton
640 Los Angeles
641 San Francisco

Not listed on this sheet are 60 Trading Centers included within the following Multiple Trade Areas: Boston; New York City; Philadelphia; Pittsburgh; Detroit; Chicago; Cleveland; St. Louis; Los Angeles and San Francisco.

LIST OF STATISTICAL ANALYSES

THE TRAFFIC.

I THE UNDERLYING SURVEYS

Section 1 Description of Underlying Surveys

Page
Analysis 1.1 Railway Carrier Groups - Eastern District 17
Analysis 1.2 Railway Carrier Groups - Southern District 18
Analysis 1.3 Railway Carrier Groups - Western District 19
Analysis 1.4 Water Carrier Groups - Atlantic Coastwise and Inland 20
Analysis 1.5 Water Carrier Groups - Atlantic Gulf, Intercoastal and Inland Waterways 21
Analysis 1.6 Water Carrier Groups - Great Lakes System 22
Analysis 1.7 Water Carrier Groups - Pacific Coastwise and Inland 23
Analysis 1.8 Pipe Line Carrier Groups 24
Analysis 1.9 Lists of Commodity and Business Groups 25
Analysis 1.10 Reconciliation between Freight Traffic Report Commodity Groups, Rail Carrier Inquiry Commodity Groups, Shippers' Inquiry Business Groups and I.C.C. Former and Present Freight Commodity Classes 26

Section 3 Typicality of 1932 Statistics

Analysis 3.1 Chronological Indices of the Extent of Rail Operations 27
Analysis 3.2 Chronological Indices of Rail Freight Service Income 28
Analysis 3.3 Chronological Indices of Rail Revenue per Net Ton Mile of Commodity Groups - Carload Traffic Only 29
Analysis 3.4 Chronological Indices of Rail Maintenance Unit Costs 30
Analysis 3.5 Chronological Indices of Rail Transportation Unit Costs 31
Analysis 3.6 Chronological Indices of Rail Overhead Unit Costs 32
Analysis 3.7 Chronological Indices of Rail Tonnage of Commodity Groups 33
Analysis 3.8 Chronological Indices of Rail Net Ton Miles of Commodity Groups - Carload Traffic Only 34
Analysis 3.9 Chronological Indices of Pipe Traffic Operations and Income 35
Analysis 3.10 Chronological Indices of Crude Petroleum Production (Tons) 36

II PROFITABILITY OF FREIGHT SERVICE

Section 4 Income

Analysis 4.1 Reporting Carriers Freight Service Income - 1932 37
Analysis 4.2 Rail Carrier Freight Service Income - 1932 38
Analysis 4.3 Rail Carrier Freight Service Income Eastern and Southern Districts - 1932 39
Analysis 4.4 Rail Carrier Freight Service Income Western District - 1932 40
Analysis 4.5 Water Carlot Carrier Freight Service Income - 1932 41
Analysis 4.6 Water Cargo Carrier Freight Service Income - 1932 42
Analysis 4.7 Pipe Carrier Freight Service Income - 1932 43

III FREIGHT VOLUME

Section 6 Aggregate Volume

Analysis 6.1 Tonnage of American Products and Imports - Revised Classification 44
Analysis 6.2 Tonnage of American Product and Imports - Reconciled with I.C.C. Commodity Classification 45
Analysis 6.3 Supply and Demand of Petroleum - 1932 46

Section 7 Carrier Distribution

Analysis 7.1 Freight Tonnage Originated and Reported by Carriers - 1932 47
Analysis 7.2 Freight Tonnage Reported by Shippers - 1933 48
Analysis 7.3 Freight Ton Miles Reported by Shippers - 1933 49
Analysis 7.4 Average Haul (In Miles) Reported by Shippers - 1933 50
Analysis 7.5 Relation of Rail Freight Traffic to Area and Population 51
Analysis 7.6 Production and Distribution of Crude Petroleum and Petroleum Products - 1932 52
Analysis 7.7 Tonnage Moved by Water Carriers (Domestic Only) 53

IV FREIGHT TRAFFIC MARKETS

Section 8 Territorial Markets

Page
Analysis 8.1 Origin and Destination of Rail Freight Commodities - 1932 54
Analysis 8.2 Production Areas of Crude Petroleum - 1932 55
Analysis 8.3 Petroleum Refinery Capacity as of January 1, 1933 56
Analysis 8.4 Location of Petroleum Refineries East of Mississippi River 57
Analysis 8.5 Location of Refineries in Southwestern Districts 58
Analysis 8.6 Location of Refineries in Pacific Districts 59

Section 9 Terminal District Markets

Analysis 9.1 Distribution of Railway Commodities Terminated Among Classes of Terminal Districts - 1932 60
Analysis 9.2 Distribution by Rate Territory of Railway Commodities Among Metropolitan and Major Terminal Districts - Aggregate Cars Terminated - 1932 61
Analysis 9.3 Distribution of Railway Commodities Among Minor Terminal Districts - Aggregate Cars Terminated - 1932 62
Analysis 9.4 Distribution of Railway Commodities Among New England and Trunk Line Metropolitan Districts - Aggregate Cars Terminated - 1932 63
Analysis 9.5 Distribution of Railway Commodities Among Central Metropolitan Districts - Aggregate Cars Terminated - 1932 64
Analysis 9.6 Distribution of Railway Commodities Among Southern Metropolitan Districts - Aggregate Cars Terminated - 1932 65
Analysis 9.7 Distribution of Railway Commodities Among Western Metropolitan Districts - Aggregate Cars Terminated - 1932 66

Section 10 Trade Area Markets

Analysis 10.1 Freight Traffic of United States, Districts, Territories and Multiple Markets 67
Analysis 10.2 Freight Traffic of New England Trade Areas - 1932 68
Analysis 10.3 Freight Traffic of New York and New Jersey Trade Areas - 1932 69
Analysis 10.4 Freight Traffic of Pennsylvania, Maryland and Delaware Trade Areas - 1932 70
Analysis 10.5 Freight Traffic of Michigan and Ohio Trade Areas - 1932 71
Analysis 10.6 Freight Traffic of Illinois, Indiana and Wisconsin Trade Areas - 1932 72
Analysis 10.7 Freight Traffic of Virginia and West Virginia Trade Areas - 1932 73
Analysis 10.8 Freight Traffic of Kentucky, Tennessee, North and South Carolina Trade Areas - 1932. 74
Analysis 10.9 Freight Traffic of Mississippi, East Louisiana, Alabama, Georgia and Florida Trade Areas - 1932 75
Analysis 10.10 Freight Traffic of Minnesota, Iowa, North Missouri, Wisconsin and Michigan Trade Areas - 1932 76
Analysis 10.11 Freight Traffic of North Dakota, Wyoming, South Dakota, Nebraska, Colorado and Kansas Trade Areas - 1932 77
Analysis 10.12 Freight Traffic of Missouri, Arkansas and Oklahoma Trade Areas - 1932 78
Analysis 10.13 Freight Traffic of Texas, West Louisiana and New Mexico Trade Areas - 1932 79
Analysis 10.14 Freight Traffic of Pacific Northwest Trade Areas - 1932 80
Analysis 10.15 Freight Traffic of Pacific Southwest Trade Areas - 1932 81

V FREIGHT COMMERCE

Section 12 Flow of Local Traffic

Page
Analysis 12.1 Relation of Single to Multiple Carrier Carload Traffic - 1932 82

Section 13 Flow of Intercarrier Traffic

Analysis 13.1 Analysis of Multiple Carrier Carload Traffic - 1932 83

Section 14 Intraterritorial Commerce

Analysis 14.1 Intraterritorial Interchange of Rail Cars by Eastern and Southern Railways 84
Analysis 14.2 Intraterritorial Interchange of Rail Cars by Western Railways 85

Section 15 Interterritorial Commerce

Analysis 15.1 Interterritorial Interchange of Rail Cars by Junctions - 1932 86
Analysis 15.2 Interterritorial Interchange of Rail Cars by Eastern Railways - 1932 87
Analysis 15.3 Interterritorial Interchange of Rail Cars by Southern and Western Railways - 1932 .. 88

Section 16 Nation Commerce

Analysis 16.1 Interterritorial Movement of Freight Carloads - December 13, 1933 89
Analysis 16.2 Commodity Movement - Cars Terminated in United States - December 13, 1933 90
Analysis 16.3 Commodity Movement - Cars Terminated - December 13, 1933, Originating in New England 91
Analysis 16.4 Commodity Movement - Cars Terminated - December 13, 1933, Originating in Trunk Line and Central Territories 92
Analysis 16.5 Commodity Movement - Cars Terminated - December 13, 1933, Originating in Pocahontas and Southeastern Territories 93
Analysis 16.6 Commodity Movement - Cars Terminated - December 13, 1933, Originating in Western Trunk Line and Pacific Northwest Territories 94
Analysis 16.7 Commodity Movement - Cars Terminated - December 13, 1933, Originating in Southwestern and Pacific Southwest Territories 95
Analysis 16.8 Comparative Statement of Revenues of Interdistrict and Intradistrict Traffic - United States and by Districts - December 13, 1933 96
Analysis 16.9 Comparative Statement of Revenues of Intraterritorial and Interterritorial Traffic - Eastern District Territories - December 13, 1933 97
Analysis 16.10 Comparative Statement of Revenues of Intraterritorial and Interterritorial Traffic of Southern District Territories - December 13, 1933 98
Analysis 16.11 Comparative Statement of Revenues of Intraterritorial and Interterritorial Traffic of Western District Territories - December 13, 1933 99

THE SERVICE

VII TRANSPORTATION SPEED

Section 20 Present Speeds

Page
Analysis 20.1 Shippers Comparison of Typical Competitive Movements 100
Analysis 20.2 Comparative Overall Speeds of Transport Agencies 101
Analysis 20.3 Speed of Railway Service 102
Analysis 20.4 Artificial Restrictions of Railway Speed 103
Analysis 20.5 Maximum Speed Restrictions for Railway Freight Service on Good Tangent Track and Schedule Agreement Decisions 104
Analysis 20.6 Freight Schedule Conferences 105

Section 21 Potential Speed

Analysis 21.1 Highway Terminal Speed Advantage 106

Section 22 Effect of Speedy Service

Analysis 22.1 Result of Highway Speed 107

VIII COMPLETENESS OF TRANSPORTATION SERVICE

Section 24 Present Service

Analysis 24.1 Railway Commodities Delivered (Carloads Only) United States and Eastern District Territories - 1932 108
Analysis 24.2 Railway Commodities Delivered (Carloads Only) Southern District Territories - 1932 . 109
Analysis 24.3 Railway Commodities Delivered (Carloads Only) Western District Territories - 1932 .. 110
Analysis 24.4 Railway Deliveries - United States - 1932 111
Analysis 24.5 Rail Commodity Collections (Carload Only) - December 13, 1933 112
Analysis 24.6 Shippers Cost to Complete Rail Service - United States - 1932 113

Section 25 Potential Service

Analysis 25.1 Comparison of Container and Freight Car Handling Metropolitan Terminals - 1932 114

Section 26 Effect of Complete Service

Analysis 26.1 Result of Highway Completeness 115

IX SCHEDULE CORRELATION

Section 30 Effect of Correlation

Analysis 30.1 Result of Highway Regular Schedules 116
Analysis 30.2 Result of Highway Convenient Schedules 117

X ADAPTNESS

Section 32 Present Adaptness

Analysis 32.1 Shippers' Cost for Packing and Loading Rail Shipments 118

Section 34 Effect of Adaptness

Analysis 34.1 Result of Highway Liberal Packing Requirements 119

XII FREIGHT TRAFFIC SALES UNIT

Section 38 Present Sales Unit

Analysis 38.1 Shippers' Report of Comparative Average Carloads in Tons 120
Analysis 38.2 Minimum Tender Requirements of Pipe Lines - 1932 121

Section 40 Effect of Modern Unit

Analysis 40.1 Result of Highway Minimum Weight Requirements 122

THE SERVICE

XIII FREIGHT COMMODITY CLASSIFICATION

Section 43 Risk

Page
Analysis 43.1 Factor of Insurance in Classification - Rail Freight Claim Payments - 1932 123

Section 45 Present Classification

Analysis 45.1 Average Load of All Railway Traffic, in Tons - 1932 124
Analysis 45.2 Average Haul of All Railway Traffic, in Miles - 1932 125
Analysis 45.3 Average Revenue of All Railway Traffic, per Ton Mile - 1932 126
Analysis 45.4 Average Revenue of All Railway Traffic, per Loaded Car Mile - 1932 127
Analysis 45.5 Average Load of Railway Local Traffic, in Tons - 1932 128
Analysis 45.6 Average Haul of Railway Local Traffic, in Miles - 1932 129
Analysis 45.7 Average Revenue of Railway Local Traffic, per Ton Mile - 1932 130
Analysis 45.8 Average Revenue of Railway Local Traffic, per Loaded Car Mile - 1932 131
Analysis 45.9 Average Load of Railway Interline Traffic Originated or Terminated, in Tons - 1932 . 132
Analysis 45.10 Average Haul of Railway Interline Traffic Originated or Terminated, in Miles - 1932. 133
Analysis 45.11 Average Revenue of Railway Interline Traffic Originated or Terminated, per Ton Mile - 1932 134
Analysis 45.12 Average Revenue of Railway Interline Traffic Originated or Terminated, per Loaded Car Mile - 1932 135
Analysis 45.13 Average Load of Railway Intermediate Traffic, in Tons - 1932 136
Analysis 45.14 Average Haul of Railway Intermediate Traffic, in Miles - 1932 137
Analysis 45.15 Average Revenue of Railway Intermediate Traffic, per Ton Mile - 1932 138
Analysis 45.16 Average Revenue of Railway Intermediate Traffic, per Loaded Car Mile - 1932 139
Analysis 45.17 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of All Commodities and Rough Material - 1932 140
Analysis 45.18 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Raw Materials - 1932 141
Analysis 45.19 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Semiprocessed Material - 1932 142
Analysis 45.20 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Necessaries -1932 143
Analysis 45.21 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Auxiliaries -1932 144
Analysis 45.22 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Accessories -1932 145
Analysis 45.23 Unit Revenues (Terminal and Line) of Commodity Groups by Districts - 1932 146
Analysis 45.24 Traffic Statistics and Unit Revenue (Net Ton Mile) of Commodity Groups by Districts - 1932 147

Section 46 Suggested Classification

Analysis 46.1 Result of Highway Liberal Classification Provisions 148

XIV PRICE LEVEL

Section 49 Commodity Level

Analysis 49.1 Shippers' Comparisons of Charges, Classified by Commodities 149
Analysis 49.2 Shippers' Comparison of Transport Charges Classified by Length of Haul 150
Analysis 49.3 Shippers' Comparison of Transport Charges Classified by Size of Load 151
Analysis 49.4 Unit Revenues of Rail, Water and Pipe Carriers 152
Analysis 49.5 Motor Truck Basic Cost 153
Analysis 49.6 Highway Basic Unit Costs 154
Analysis 49.7 Mileage Scale of Highway Unit Costs 155
Analysis 49.8 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Rough and Raw Material Traffics 156
Analysis 49.9 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Semi-processed Material Traffics 157
Analysis 49.10 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Necessaries Traffics 158
Analysis 49.11 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Auxiliaries Traffics 159
Analysis 49.12 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Accessories Traffics 160
Analysis 49.13 Synthetic Scale of 1932 Rail Charges per Car of Eleven Most Important Individual Commodity Groups 161
Analysis 49.14 Synthetic Scale of 1932 Rail Charges per Car of Eleven Important Individual Commodity Groups 162
Analysis 49.15 Comparison of Carrier Rates for Transportation of Crude Petroleum Between Points in Central Eastern Territory 163
Analysis 49.16 Comparison of Carrier Rates for Transportation of Crude Petroleum from Kansas and Oklahoma Fields to Central East Territory 164
Analysis 49.17 Comparison of Carrier Rates for Transportation of Crude Petroleum from Texas Fields to Western Trunk Line and East Central Territory 165
Analysis 49.18 Comparison of Carrier Rates for Transportation of Crude Petroleum from Mid-Continent Fields to Gulf Ports and Southwest 166
Analysis 49.19 Comparison of Carrier Rates for Transportation of Gasoline 167
Analysis 49.20 Pipe Line Patronage (Trunk Line Only) - 1931 168

Section 50 Effect of Price Level

Analysis 50.1 Result of Highway Lower Charges 169

XV PRICE STRUCTURE

Section 53 Carrier Structures

Analysis 53.1 Railway District Revenue and Traffic Statistics - 1932 170

THE OPERATIONS

XVIII CARRIER INQUIRIES

Section 67 Statistics Used

Page
Analysis 67.1 Rail Operative Service Units - 1932 171
Analysis 67.2 Rail Freight Expense and Taxes - 1932 - Aggregate 172

Section 68 Unit Costs

Analysis 68.1 Grouping of Primary Cost Accounts 173

XIX NATURE OF OPERATIONS

Section 70 Extent

Analysis 70.1 Extent of Carrier Operations 174
Analysis 70.2 Extent of Water Operations - Carlot (Common) Carriers - 1932 175
Analysis 70.3 Extent of Water Operations - Cargo (Contract and Private) Carriers - 1932 176
Analysis 70.4 Extent of Rail Operations - 1932 177
Analysis 70.5 Service Units of Rail Operating Districts by States - 1932 178
Analysis 70.6 Rail Traffic Density per Route Mile (By States) - 1932 179
Analysis 70.7 Rail Track Facilities by Operating Districts 180
Analysis 70.8 Extent of Pipe Operations - 1932 181
Analysis 70.9 Petroleum Pipe Line Mileage by States 182
Analysis 70.10 Petroleum Pipe Line Mileage by Size of Line - 1931 183
Analysis 70.11 Integrated Refineries and Pipe Lines - 1931 184
Analysis 70.12 Partly Integrated Refineries and Pipe Lines - 1931 185
Analysis 70.13 Independent Pipe Lines - 1931 186

XX CIRCUITY OF MOVEMENT

Section 71 Directness

Analysis 71.1 Directness of Rail Service - Summary of All Carload Terminated - December 13, 1933 . 187
Analysis 71.2 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in United States and in New England Territories 188
Analysis 71.3 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in Trunk Line and Central Territories 189
Analysis 71.4 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in Pocahontas and Southern Territories 190
Analysis 71.5 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in Western Trunk Line and Southwestern Territories 191
Analysis 71.6 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in Pacific Northwest and Pacific Southwest Territories 192

XXI OVERALL COSTS

Section 73 Capital Servicing

Analysis 73.1 Unit Cost of Providing a Return on Carrier Investment 193

Section 75 Function Costs

Analysis 75.1 Carrier Function Unit Costs - 1932 194
Analysis 75.2 Water Function Unit Costs - 1932 195
Analysis 75.3 Pipe Function Unit Costs - 1932 196
Analysis 75.4 Rail Function Unit Costs - 1932 197
Analysis 75.5 Rail Function Cost Percentages - 1932 198

XXII CARRIER FIXED PLANT

Section 77 Maintenance Costs

Analysis 77.1 Carrier Maintenance Unit Costs - 1932 199
Analysis 77.2 Rail Maintenance Unit Costs - 1932 200
Analysis 77.3 Water Maintenance Unit Costs - 1932 201
Analysis 77.4 Cost of Pipe Maintenance 202

THE OPERATIONS

XXIII TRANSPORT POWER

Section 80 Power Maintenance Costs

Page
Analysis 80.1 Rail Power Maintenance Costs by Types of Trains - 1932 (Gross Ton Mile Basis) 203
Analysis 80.2 Rail Power Maintenance Costs by Types of Trains - 1932 (Locomotive Ton Mile Basis) . 204

Section 81 Modernization

Analysis 81.1 Summary of Specifications of Single Power Car (Container Units) 205
Analysis 81.2 Summary of Specifications of Small Steam Power Units (Locomotives) 206
Analysis 81.3 Summary of Specifications of Diesel Power Units 207
Analysis 81.4 Fixed and Variable Line Costs - Indicated by Submissions for Freight Power Cars 208
Analysis 81.5 Fixed and Variable Line Costs - Indicated by Submissions for Light Steam Locomotives 209
Analysis 81.6 Fixed and Variable Costs Indicated by Submissions for Light Diesel - Electric Locomotives and Light Diesel - Mechanical Locomotives 210

XXIV TRANSPORT VEHICLES

Section 83 Containers

Analysis 83.1 Containers Built for Transportation via Rail, Highway or Water 211

Section 84 Weight

Analysis 84.1 Rail Freight Car Characteristics - 1933 212

Section 85 Versatility

Analysis 85.1 Distribution of Rail Traffic Among Types of Equipment - December 13, 1933 213

Section 89 Mobility

Analysis 89.1 Rail Car Service by Type of Equipment - December 13, 1933 214

Section 90 Utility

Analysis 90.1 Rail Freight Car Performance - 1932 215
Analysis 90.2 Utilization of Box Car Capacity - Non-manufactures - 1933 216
Analysis 90.3 Utilization of Box Car Capacity - Manufactures - 1933 217
Analysis 90.4 Utilization of Capacity of Refrigerator, Stock, Poultry, etc. Cars - 1933 218
Analysis 90.5 Utilization of Open Top, Tank and Flat Cars - 1933 219

XXV CONDUCTING TRANSPORTATION

Section 93 Transportation Unit Costs

Analysis 93.1 Carrier Transportation Unit Costs - 1932 220
Analysis 93.2 Rail Transportation Unit Costs - 1932 221
Analysis 93.3 Water Transportation Unit Costs - 1932 222
Analysis 93.4 Pipe Transportation Unit Costs - 1932 223

Section 95 Assemblage

Analysis 95.1 Rail Assemblage Costs 224
Analysis 95.2 Distribution of Switch Engine Time Among Services - Summary of All Terminal Districts - 1932 225
Analysis 95.3 Distribution of Switch Engine Time Among Services - Eastern District - 1932 226
Analysis 95.4 Distribution of Switch Engine Time Among Services - Southern District - 1932 227
Analysis 95.5 Distribution of Switch Engine Time Among Services - Western District - Metropolitan Terminal Districts - 1932 228
Analysis 95.6 Distribution of Switch Engine Time Among Services - Western District - Major Terminal Districts - 1932 229

XXVI TRANSPORT OVERHEAD

Section 100 Overhead Costs

Analysis 100.1 Carrier Overhead Unit Costs - 1932 230
Analysis 100.2 Water Overhead Unit Costs Carlot Carriers - 1932 231
Analysis 100.3 Water Overhead Unit Costs Cargo Carriers - 1932 232
Analysis 100.4 Pipe Overhead Unit Costs - 1932 233
Analysis 100.5 Rail Overhead Unit Costs - 1932 234

XXVII YARD AND TERMINAL OPERATIONS

Section 104 Location Costs

Analysis 104.1 Carrier Location Unit Costs - 1932 235
Analysis 104.2 Water Location Unit Costs - 1932 236
Analysis 104.3 Pipe Location Unit Costs 237
Analysis 104.4 Rail Location Unit Costs 238
Analysis 104.5 Rail Location Cost Percentages - 1932 239
Analysis 104.6 Track Service Analysis of Yard Unit Costs - Districts and Territories - 1932 240
Analysis 104.7 Track Service Analysis of Yard Unit Costs - Eastern Districts - 1932 241
Analysis 104.8 Track Service Analysis of Yard Unit Costs - Southern and Western Districts - 1932 .. 242

THE OPERATIONS

XXVII YARD AND TERMINAL OPERATIONS

Section 105 Utilization

Page
Analysis 105.1 Capacity of Rail Terminals in Eastern District 243
Analysis 105.2 Capacity of Rail Terminals - Southern and Western Districts 244
Analysis 105.3 Capacity of Rail Terminals - Major Terminal Districts by States 245
Analysis 105.4 Rail Terminal Cars - Eastern District - 1932 246
Analysis 105.5 Rail Terminal Cars - Southern and Western Districts - 1932 247

Section 106 Terminal Costs

Analysis 106.1 Carrier Terminal Unit Costs - 1932 248
Analysis 106.2 Water Terminal Unit Costs - 1932 249
Analysis 106.3 Pipe Terminal Unit Costs - 1932 250
Analysis 106.4 Rail Terminal Unit Costs 251
Analysis 106.5 Distribution of Terminal Cost per Loaded Car Between Station and Delivery 252
Analysis 106.6 Rail Terminal Service - Track Unit Costs - Eastern District - 1932 253
Analysis 106.7 Rail Terminal Service - Track Unit Costs - 1932 - Southern and Western Districts .. 254
Analysis 106.8 Functional Distribution of Terminal Unit Costs per Car - 1932 - All and Local Traffic 255
Analysis 106.9 Functional Distribution of Terminal Unit Costs per Car - 1932 - Multiple Carrier Traffic 256
Analysis 106.10 Distribution of Switch Engine Time Among Services - 1932 257
Analysis 106.11 Distribution of Way Freight Train Hours Among Services - 1932 258
Analysis 106.12 Terminal Trucking Operations 259
Analysis 106.13 Scale of Terminal and Distribution Costs of Handling Freight Traffic in Containers. 260

XXVIII LINE OPERATIONS

Section 107 Line Costs

Analysis 107.1 Carrier Line Unit Costs - 1932 261
Analysis 107.2 Rail Line Unit Costs - 1932 262
Analysis 107.3 Water Line Unit Costs - 1932 263
Analysis 107.4 Pipe Line Unit Costs - 1932 264
Analysis 107.5 Fixed and Variable Line Costs of Carlot Trains - 1932 265
Analysis 107.6 Functional Distribution of Road Service Unit Cost per Net Ton Mile - 1932 266
Analysis 107.7 Functional Distribution of Unit Cost of Road Service per Loaded Car Miles - 1932 .. 267

Section 108 Utilization

Analysis 108.1 Rail Freight Train Performance 268
Analysis 108.2 Rail Through Train Performance - 1932 269
Analysis 108.3 Train Operated - 1932 270

Section 109 Yardings

Analysis 109.1 Rail Unit Costs of Intermediate Yardings 271

Section 110 Conveyance

Analysis 110.1 Rail Unit Costs of Road Service - 1932 272
Analysis 110.2 Rail Main Line Unit Costs of Road Service - 1932 273
Analysis 110.3 Rail Manifest Train Unit Costs of Road Service - 1932 274
Analysis 110.4 Rail Drag Train Unit Costs of Road Service - 1932 275

Section 111 Distribution

Analysis 111.1 Road Service Units - Main Line Way Trains - 1932 276
Analysis 111.2 Road Service Units - Branch Line Way Trains - 1932 277
Analysis 111.3 Rail Way Train Performance - 1932 278
Analysis 111.4 Road Service Unit Costs - Main Line Way Trains - 1932 279
Analysis 111.5 Road Service Unit Costs - Branch Line Way Trains - 1932 280

XXIX INTEGRATED MOVEMENT

Section 113 Instrument Utility

Analysis 113.1 Modernized Distributive Service - Main Line 281
Analysis 113.2 Modernized Distributive Service - Branch Line 282

XXX INTERCARRIER OPERATIONS

Section 115 Routing

Analysis 115.1 Shipper Traffic Service - Number of Replies 283
Analysis 115.2 Shipper Traffic Service - Tonnage 284

Section 116 Interchange Cost

Analysis 116.1 Rail Yard Unit Cost of Intercarrier Movements - 1932 285
Analysis 116.2 Rail Yard Unit Cost of Intercarrier Movements - Eastern District - 1932 286
Analysis 116.3 Rail Yard Unit Cost of Intercarrier Movements - Southern and Western Districts - 1932 287

SECTION 1. DESCRIPTION OF UNDERLYING SURVEYS

Analysis 1.1 Railway Carrier Groups - Eastern District

NAME OF CARRIERS	ROUTE MILES OPERATED TOTAL	MAIN	BRANCH	INVESTMENT FREIGHT PROPORTION 1932 (000)	FREIGHT SERVICE REVENUE 1930 (000)	1932 (000)
UNITED STATES - TOTAL	242,821	166,864	75,957	$ 18,321,212	$ 4,265,060	$ 2,559,380
EASTERN DISTRICT - TOTAL	59,662	45,906	13,756	7,605,997	1,860,672	1,122,400
NEW ENGLAND - TOTAL	7,242	4,941	2,301	$ 522,235	$ 148,627	$ 98,047
Bangor & Aroostook Railroad	614	326	288	27,704	7,498	5,486
Boston & Maine Railroad	2,081	1,018	1,063	162,258	47,675	31,558
Canadian National in New England	172	171	1	7,577	1,585	977
Canadian Pacific Lines in Maine	233	201	32	6,187	2,027	1,373
Canadian Pacific Lines in Vermont	85	85	-	401	1,189	664
Central Vermont Railway	457	398	59	23,318	5,958	4,188
Maine Central Railroad	1,118	592	526	44,470	14,878	9,064
New York, New Haven & Hartford R.R.	2,069	1,737	332	235,662	64,605	42,271
Rutland Railroad	413	413	-	14,658	3,213	2,466
CENTRAL EAST - TOTAL	52,969	41,511	11,458	$ 7,083,762	$ 1,712,045	$ 1,024,353
Akron, Canton & Youngstown Railway	171	171	-	12,467	2,700	1,546
Alton & Southern Railroad#	75	-	-	3,280	1,093	904
Baltimore & Ohio System (1)	7,405	5,779	1,626	855,651	217,270	123,740
Belt Railway Company of Chicago#	460	-	-	1,007	6,803	3,927
Bessemer & Lake Erie Railroad	226	226	-	58,998	14,574	3,706
Brooklyn Eastern District Terminal#	11	-	-	66	1,311	851
Cambria & Indiana Railroad	38	38	-	8,388	1,370	1,126
Chicago & Eastern Illinois Railway	939	747	192	56,028	15,765	10,060
Chicago & Illinois Midland Railway	132	132	-	11,315	3,059	2,015
Chicago, Indianapolis & Louisville Ry.	647	575	72	41,156	12,426	6,696
Chicago River & Indiana Railroad#	241	-	-	10,570	6,125	4,315
Delaware & Hudson Railroad	872	489	383	106,862	33,349	20,493
Delaware, Lackawanna & Western R.R.	999	431	568	215,450	53,539	34,439
Detroit & Mackinac Railway	242	197	45	4,105	897	646
Detroit, Toledo Shore Line Railroad	50	50	-	9,086	3,725	2,304
Detroit Terminal Railroad#	120	-	-	5,417	1,362	602
Detroit, Toledo & Ironton Railroad	473	378	95	43,678	10,101	4,105
Elgin, Joliet & Eastern Railway	447	447	-	60,000	21,805	7,764
Erie Railroad System (2)	2,588	2,030	558	438,368	96,304	65,772
Grand Trunk Western Railroad	1,023	619	404	88,523	23,396	12,523
Illinois Terminal Company	545	545	-	34,185	5,916	3,762
Indiana Harbor Belt Railroad#	632	-	-	22,420	10,856	7,299
Lake Terminal Railroad#	40	-	-	3,619	985	353
Lehigh & Hudson River Railway	97	97	-	6,441	2,150	1,494
Lehigh & New England Railroad	228	126	102	21,250	5,031	3,266
Lehigh Valley Railroad	1,362	458	904	207,251	51,733	33,479
Monongahela Railway	178	75	103	26,421	5,980	3,612
Montour Railroad	58	58	-	9,793	2,563	1,504
Newburgh & South Shore Railway#	90	-	-	5,293	1,373	602
New York, Ontario & Western Railway	568	382	186	78,841	7,442	8,794
New York Central System (3)	11,674	11,215	459	1,462,157	345,619	212,457
New York, Chicago & St. Louis Ry.	1,691	1,657	34	206,904	43,567	27,639
Pennsylvania Railroad System (4)	11,396	7,073	4,323	1,675,746	428,872	252,521
Peoria & Pekin Union Railway#	160	-	-	7,528	1,566	839
Pere Marquette Railway	2,321	1,952	369	130,914	33,569	19,673
Pittsburgh & Shawmut Railroad	103	103	-	12,832	1,122	803
Pittsburgh & West Virginia Railway	138	138	-	57,499	3,739	2,238
Reading System (5)	2,154	1,601	553	469,581	121,078	71,510
Terminal Railroad Ass'n. of St.Louis#	397	-	-	72,792	9,766	5,405
Toledo Terminal Railroad#	95	-	-	12,130	1,171	756
Union Railroad (Penna.)#	298	-	-	38,934	8,844	1,949
Wabash Railway System (6)	2,774	2,471	303	257,781	58,668	36,553
Western Maryland Railway	892	814	78	143,367	17,402	11,848
Wheeling & Lake Erie Railway	537	437	100	89,668	16,058	8,465

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(1) Includes Alton R.R., Baltimore & Ohio R.R., Baltimore & Ohio Chicago Terminal R.R.,# Staten Island Rapid Transit. (2) Includes Chicago & Erie R.R., Erie R.R., New Jersey & New York R.R., New York, Susq. & Western R.R. (3) Includes New York Central R.R., Pittsburgh & Lake Erie R.R. (4) Includes Long Island R.R., Pennsylvania R.R. (5) Includes Atlantic City R.R., Central R.R. Company of New Jersey, Reading Company. (6) Includes Ann Arbor R.R., Wabash Ry.

Track Mileage not included in Route Mile Totals, amount utilized only for Yard Service.

SECTION 1. DESCRIPTION OF UNDERLYING SURVEYS

Analysis 1.2 Railway Carrier Groups - Southern District

NAME OF CARRIERS	ROUTE MILES OPERATED TOTAL	MAIN	BRANCH	INVESTMENT FREIGHT PROPORTION 1932 (000)	FREIGHT SERVICE REVENUE 1930 (000)	1932 (000)
UNITED STATES - TOTAL	242,821	166,864	75,957	$ 18,321,212	$ 4,265,060	$ 2,559,380
SOUTHERN DISTRICT - TOTAL	45,795	34,804	10,991	3,262,693	769,904	487,363
POCAHONTAS - TOTAL	6,102	4,924	1,178	$ 979,330	$ 245,890	$ 170,140
Chesapeake & Ohio Railway	3,142	2,326	816	440,014	128,975	94,267
Norfolk & Western Railway	2,234	2,040	194	378,760	94,291	59,467
Richmond,Fredericksburg & Potomac R.R.	118	118	-	17,647	5,537	3,740
Virginian Railway	608	440	168	142,909	17,086	12,666
SOUTHEAST - TOTAL	39,696	29,882	9,814	$ 2,283,363	$ 524,015	$ 317,224
Atlanta & West Point System (1)	556	398	158	24,481	7,345	4,254
Atlantic Birmingham & Coast Railroad	639	479	160	19,265	3,666	2,193
Atlantic Coast Line System (2)	5,486	3,095	2,391	202,866	50,463	31,132
Clinchfield Railroad	309	277	32	65,886	5,832	3,996
Columbus & Greenville Railway	168	168	-	2,681	1,393	652
Florida East Coast Railway	839	552	287	59,632	6,892	4,447
Georgia & Florida Railroad	464	223	241	16,617	1,576	759
Gulf, Mobile & Northern System (3)	998	787	211	39,745	8,042	4,424
Illinois Central System (4)	8,940	6,900	2,040	610,835	139,711	85,157
Louisville & Nashville Railroad	5,167	3,309	1,858	356,178	95,270	55,001
Mississippi Central Railroad	150	150	-	7,399	1,235	575
Mobile & Ohio Railroad	1,240	1,096	144	49,458	12,835	7,275
Nashville,Chattanooga & St.Louis Ry.	1,203	690	513	42,954	15,883	9,481
Norfolk Southern Railroad	933	527	406	28,202	6,395	3,937
Seaboard Air Line Railway	4,386	3,279	1,107	197,033	40,450	25,611
Southern Railway System (5)	7,920	7,702	218	553,193	124,185	76,578
Tennessee Central Railway	296	249	47	6,938	2,840	1,753

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(1) Includes Atlanta & West Point Ry., Georgia R.R. Western Ry. of Alabama.
(2) Includes Atlantic Coast Line R.R., Charleston & Western Carolina Ry.
(3) Includes Gulf, Mobile & Northern R.R., New Orleans & Great Northern R.R.
(4) Includes Central of Georgia Ry., Gulf & Ship Island R.R., Illinois Central R.R., Yazoo & Mississippi Valley R.R.
(5) Includes Alabama Great Southern R.R., Cincinnati, New Orleans & Texas Pacific Ry., Georgia Southern & Florida Ry., New Orleans & Northeastern R.R., New Orleans Terminal Co.,# Northern Alabama Ry., Southern Railway.
# Track Mileage not included in Route Mile Totals, amount utilized only for Yard Service.

SECTION 1. DESCRIPTION OF UNDERLYING SURVEYS

Analysis 1.3 Railway Carrier Groups - Western District

NAME OF CARRIERS	ROUTE MILES OPERATED TOTAL	MAIN	BRANCH	INVESTMENT FREIGHT PROPORTION 1932 (000)	FREIGHT SERVICE REVENUE 1930 (000)	1932 (000)
UNITED STATES - TOTAL	242,821	166,864	75,957	$ 18,321,212	$ 4,265,060	$ 2,559,380
WESTERN DISTRICT - TOTAL	136,811	85,639	51,172	7,452,522	1,634,484	949,617
NORTHWEST - TOTAL	68,224	42,245	25,979	$ 3,478,915	$ 788,138	$ 452,352
Burlington System (1)	11,332	6,873	4,459	518,368	132,239	75,317
Chicago & North Western System (2)	10,180	6,007	4,173	445,119	119,915	68,682
Chicago Great Western Railroad	1,499	1,166	333	134,133	19,643	13,736
Chicago,Milwaukee,St.P. & Pac. R.R.	11,243	7,298	3,945	557,676	120,137	72,862
Duluth, Missabe & Northern Railroad	564	564	-	66,733	20,852	2,307
Duluth, South Shore & Atlantic Ry.	560	560	-	32,969	3,117	1,329
Duluth, Winnipeg & Pacific Railway	179	179	-	10,713	1,510	752
Great Northern Railway	8,458	4,675	3,783	371,626	88,937	47,095
Lake Superior & Ishpeming Railroad	160	126	34	7,903	2,229	432
Minneapolis & St. Louis Railroad	1,627	1,208	419	55,768	11,624	7,230
Minneapolis, St.P. & S.S.Marie Ry.	4,476	3,681	795	161,724	33,837	18,942
Northern Pacific Railway	6,735	3,586	3,149	430,702	67,890	40,407
Spokane International Railway	163	143	20	4,678	821	461
Spokane, Portland & Seattle Railway	952	910	42	44,220	6,627	4,182
Union Pacific System (3)	10,096	5,269	4,827	636,583	158,758	98,619
SOUTHWEST - TOTAL	68,588	43,361	25,227	$ 3,973,607	$ 846,346	$ 497,264
Atchison,Topeka & Santa Fe System (4)	13,534	6,610	6,924	820,854	179,932	109,824
Burlington-Rock Island Railroad	280	218	62	11,161	2,091	970
Chicago, R.I. & Pacific System (5)	8,333	5,536	2,797	366,391	99,163	58,663
Denver & Rio Grande Western Railroad	2,551	1,961	590	170,889	25,395	15,598
Denver & Salt Lake Railway	232	232	-	12,709	2,883	1,724
Fort Smith & Western Railway	250	250	-	6,109	1,194	635
Kansas City Southern System (6)	933	865	68	97,329	17,510	9,147
Louisiana & Arkansas System (7)	864	864	-	35,926	7,479	4,497
Midland Valley System (8)	822	822	-	36,343	6,706	3,608
Missouri & North Arkansas Railway	365	365	-	3,273	1,482	764
Missouri-Kansas-Texas System (9)	3,294	2,295	999	175,776	37,568	22,711
Missouri Pacific System (10)	10,582	5,382	5,200	505,523	131,538	78,430
Nevada Northern Railway	166	141	25	1,440	661	273
St.Louis-San Francisco System (11)	5,889	4,408	1,481	325,767	61,015	36,777
St.Louis Southwestern System (12)	1,913	1,248	665	106,200	20,116	11,900
San Diego & Arizona Eastern Railway	155	155	-	9,553	784	303
Southern Pacific System (13)	14,125	8,812	5,313	1,024,670	200,890	110,844
Texas & Pacific Railway	2,338	1,478	860	128,207	30,815	17,431
Texas Mexican Railway	162	162	-	5,459	1,036	621
Utah Railway	111	111	-	8,842	1,690	1,156
Western Pacific Railroad	1,214	1,054	160	112,653	14,635	10,158
Wichita Falls & Southern Railroad	204	204	-	6,565	960	590
Wichita Valley Railroad	271	188	83	1,968	801	641

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(1) Includes Chicago,Burlington & Quincy R.R.,Colorado & Southern Ry.,Ft.Worth & Denver City Ry.
(2) Includes Chicago & North Western Ry., Chicago, St.P. Minn. & Omaha Ry.
(3) Includes Los Angeles & Salt Lake R.R.,Oregon Short Line R.R.,Oregon-Wash. R.R. & Nav. Co., St. Joseph & Grand Island Ry., Union Pacific R.R.
(4) Includes Atchison,Topeka & Santa Fe Ry.,Pan Handle & Santa Fe Ry.,Gulf,Colorado & Santa Fe.
(5) Includes Chicago,R.I. & Gulf Ry., Chicago, R.I. & Pacific Ry.
(6) Includes Kansas City Southern Ry., Texarkana & Ft. Smith Ry.
(7) Includes Louisiana & Arkansas Ry., Louisiana, Arkansas & Texas Ry.
(8) Includes Kansas, Oklahoma & Gulf Ry.,Midland Valley R.R.,Oklahoma City-Ada-Atoka Ry.
(9) Includes Missouri-Kansas-Texas Ry., Missouri-Kansas-Texas Ry. of Texas.
(10) Includes International-Great Northern R.R., Gulf Coast Lines (Beaumont,SourLake & Western Ry.,New Orleans,Texas & Mexico Ry.;St.Louis,Brownsville & Mexico Ry.,San Antonio,Uvalde & Gulf R.R.) Missouri-Illinois R.R.; Missouri Pacific R.R.
(11) Includes Ft.Worth & Rio Grand Ry., St.Louis-San Francisco Ry., St.Louis-San Francisco & Texas Ry., Quanah, Acme & Pacific Ry.
(12) Includes St.Louis Southwestern Ry., St.Louis Southwest Ry. of Texas.
(13) Includes Northwestern Pacific R.R., Southern Pacific Co., Texas & New Orleans Ry.

Analysis 1.4 Water Carrier Groups - Atlantic Coastwise and Inland

GROUP CLASS NAME OF COMPANY	ROUTE MILES		FREIGHT PROPORTION OF INVESTMENT (000)	FREIGHT REVENUE 1932 (000)
	WATER DISTANCE (miles)	RAIL DISTANCE (miles)		
UNITED STATES				
Total	262,057	189,739	$ 357,350	$ 119,581
Common - (Carlot)	169,172	112,865	245,136	102,407
Cargo				
Contract	55,733	43,395	75,760	12,466
Private	37,152	33,479	36,454	4,708
ATLANTIC COASTWISE AND INLAND				
Regional Total	40,900	38,690	$ 60,766	$ 28,045
Common - (Carlot)	22,387	19,860	49,140	24,767
Cargo				
Contract	4,833	4,586	7,148	2,516
Private	13,680	14,244	4,478	761
COMMON - (CARLOT)				
Baltimore and Carolina Line	5,757	3,778	$ 64	$ 1,262
Baltimore Steam Packet Company	188	264	1,726	412
Ben Franklin Transportation Company	15	15	99	61
Bull Steamship Company	1,942	1,152	31	707
Bruxton Lines	116	89	112	221
Central Vermont Transportation Company	120	123	399	1,134
Charleston-Beaufort Lines	125	95	5	37
Chesapeake Steamship Company	381	450	1,974	578
Coburn Steamship Company	20	20*	74	6
Casco Bay Lines	41	41*	24	18
Colonial Navigation Company	380	375	392	596
Dyer Transportation Line	21	22	9	32
Elizabeth City-Carolina Line	70	55	22	12
Ericsson Line	120	96	#	293
Eastern Steamship Line	1,820	2,178	20,464	7,488
Hudson River Steamboat Company	158	150	283	559
Lake Transfer Company	7	7*	12	7
Merchants' and Miners' Transportation Company	6,450	6,169	7,756	5,096
Middlesex Transportation Company	40	33	228	112
Miller River Line	100	77	25	12
New England Steamship Company	995	943	6,301	1,988
New York and New Jersey Steamboat Company	85	95	183	130
Norfolk, Baltimore and Carolina Line	860	1,029	291	359
Norfolk and Washington Steamship Company	196	205	499	143
North Carolina Line	450	399	115	33
Ocean Steamship Company of Savannah	1,015	1,079	5,011	1,623
Peninsula and Occidental Steamship Company	360	360*	1,191	114
Philadelphia and Norfolk Steamship Company	250	255	1,360	1,180
Smithfield, Newport News and Norfolk Steamship Co.	14	14*	6	15
Starin New Haven Lines	80	73	159	257
Stevens Line Company	26	26*	39	23
Thames River Line	185	193	286	258
CONTRACT - (CARGO)				
American Sugar Transit Corporation	231	197	$ 1,867	$ 7
Clark (M.L.)	400	267	315	38
Mallory (C.D.)	800	800	476	741
North American Steamship Company	535	580	24	107
Tracy (M. & J.)	2,867	2,742	4,466	1,623
PRIVATE - (CARGO)				
Brooks-Scanlon Company	2,100	2,887	$ 212	$ 94
Continental Steamship Company	2,000	1,514	2,623	326
Hartwelson Steamship Company	523	580	80	52
P. Dougherty Company	550	580	250	27
Proctor and Gamble Company	918	1,079	#	45
River Transport Line	25	25*	55	19
Rockland Transportation Company	950	1,048	69	84
Welhart Steamship Company	450	580	78	60
Wilmore Steamship Company	6,164	5,951	1,111	54

* Water Distance Used. # Not Reported.

Analysis 1.5 Water Carrier Groups - Atlantic Gulf, Intercoastal and Inland Waterways

GROUP CLASS NAME OF COMPANY	ROUTE MILES		FREIGHT PROPORTION OF INVESTMENT (000)	FREIGHT REVENUE 1932 (000)
	WATER DISTANCE (miles)	RAIL DISTANCE (miles)		
ATLANTIC GULF				
Regional Total	35,289	28,784	$ 37,513	$ 14,527
Common - (Carlot)	26,139	22,252	31,243	13,299
Cargo				
Contract	7,250	4,832	5,052	1,033
Private	1,900	1,700	1,218	194
COMMON - (CARLOT)				
Clyde Mallory Line	9,724	9,181	$ 7,840	$ 5,368
Coast Transportation Company	442	237	37	60
High Seas Transportation Company	1,900	1,557	135	132
Mooremack Gulf Lines	4,249	2,693	835	1,401
Newtex Steamship Corporation	1,963	1,653	1,234	563
Pensacola, St. Andrews and Gulf Steamship Company	350	337	32	61
Seatrain Lines	1,789	1,789*	4,567	548
Southern Pacific Steamship Company	3,848	3,227	15,911	3,948
Southern Steamship Company	1,874	1,578	652	1,219
CONTRACT - (CARGO)				
Union Sulphur Company	7,250	4,832	$ 5,052	$ 1,033
PRIVATE - (CARGO)				
Freeport Sulphur Company	1,900	1,700	$ 1,218	$ 194
INTERCOASTAL				
Regional Total	94,227	45,214	$ 101,230	$ 39,128
Common - (Carlot)	88,127	42,245	99,830	38,946
Private - (Cargo)	6,100	2,969	1,400	183
COMMON - (CARLOT)				
American-Hawaiian Steamship Company	13,583	6,086	$ 20,028	$ 7,972
American Mail Line	5,560	3,116	5,965	2,947
Calmar Steamship Company	7,637	2,969	2,963	1,847
Christenson Steamship Company	5,500	3,100	2,160	1,507
Isthmian Steamship Company	7,722	3,100	29,257	7,502
Luckenback Steamship Company	13,046	8,794	23,822	6,777
McCormack Steamship Company	7,150	2,910	1,855	2,040
Panama Mail Steamship Company	7,014	3,116	7,358	2,341
Pacific-Atlantic Steamship Company	7,415	2,958	4,452	2,544
Shephard Steamship Company	7,500	2,970	567	991
Swayne and Hoyt	6,000	3,126	1,403	2,480
PRIVATE - (CARGO)				
Weyerhauser Steamship Company	6,100	2,969	$ 1,400	$ 183
INLAND WATERWAYS				
Regional Total	13,599	8,814	$ 31,680	$ 9,581
Common - (Carlot)	9,489	6,232	30,198	8,571
Cargo				
Contract	3,960	2,425	1,469	1,010
Private	150	157	13	#
COMMON - (CARLOT)				
American Barge Line	1,950	1,128	$ 2,362	$ 859
Commercial Transportation Company	430	283	121	139
Eagle Packet Company	750	739	66	21
El Rito Transportation Company	118	59	38	24
Inland Waterways Corporation	2,786	1,873	23,588	5,914
Illinois River Packet Company	52	87	12	14
John I. Hay Company	1,741	1,072	597	64
Mississippi Valley Barge Line	1,662	991	3,414	1,536
CONTRACT - (CARGO)				
Baker Tow Boat Company	367	433	$ 111	$ 40
Burke Line Steamers	670	430	24	212
Union Barge Line Corporation	2,560	1,346	1,327	727
Warrior Packet Line	363	216	7	31
PRIVATE - (CARGO)				
Acadia-Vermillion Navigation Company	150	157	$ 13	#

* Water Distance Used. # Not Reported.

Analysis 1.6 Water Carrier Groups - Great Lakes System

GROUP CLASS NAME OF COMPANY	ROUTE MILES WATER DIS-TANCE (miles)	ROUTE MILES RAIL DIS-TANCE (miles)	FREIGHT PRO-PORTION OF INVESTMENT (000)	FREIGHT REVENUE 1932 (000)
GREAT LAKES SYSTEM (LAKES, RIVERS AND CANALS)				
Regional Total	58,357	49,049	$ 111,494	$ 18,503
Common - (Carlot)	8,931	7,837	21,748	7,404
Cargo				
Contract	36,004	28,680	61,224	7,711
Private	13,422	12,532	28,522	3,388
COMMON - (CARLOT)				
Arnold Transit Company	89	89*	$ 21	$ 7
Ashley and Dustin Steamer Line	75	75*	2	ø
Canada-Atlantic Transit Company	580	646	410	384
Cleveland and Buffalo Transportation Company	330	539	1,652	197
Colombian Steamship Company	1,450	880	#	124
Detroit and Cleveland Navigation Company	1,010	666	7,529	985
Great Lakes Transit Company	1,900	1,304	6,546	3,294
Mackinac Transportation Company	9	9*	389	109
Minnesota-Atlantic Transit Company	986	826	#	986
Nicholson Universal Steamship Company	1,352	892	2,752	520
Ontario Car Ferry	60	270	712	158
Pennsylvania-Ontario Transportation Company	51	205	350	140
Pere Marquette Line	100	359	354	221
Sandusky and Isles Steamship Company	24	24*	15	5
Toronto, Hamilton and Buffalo Navigation Company	91	180	434	29
Western Transit Company	727	618	29	36
Wisconsin and Michigan Transportation Company	97	255	553	209
CONTRACT - (CARGO)				
American Steamship Company	750	778	$ 5,391	$ 942
Bison Steamship Company	800	670	278	119
Brown Steamship Company	4,625	2,257	596	120
Federal Motorship Company	1,673	803	816	237
Fontana Steamship Company	800	808	417	17
Globe Steamship Company	800	808	2,109	97
Grammer Steamship Company	800	808	233	81
Great Lakes Steamship Company	800	808	8,843	210
Interlake Steamship Company	800	808	19,759	247
Kinsman Transit Company	800	808	2,760	419
Midland Steamship Company	800	808	2,441	353
Morrow Steamship Company	800	808	1,806	315
National Steamship Company	0	0	356	3
Paisley, (J.A.) Steamship Company	800	808	518	206
Peterson Steamship Company	830	605	97	62
Petoskey Transportation Company	290	269	575	53
Pioneer Steamship Company	800	808	7,129	1,044
Seaboard-Great Lakes Corporation	5,250	3,934	5	1,884
Sierre Steamship Company	200	200*	440	196
Triton Steamship Company	0	0	360	1
United Steamship Company	200	200*	651	102
Western Steamship Company	900	808	700	243
Wilson Transit Company	12,486	10,076	4,944	758
PRIVATE - (CARGO)				
Buffalo Gravel Corporation	75	90	$ 1,607	$ 161
Cement Transit Company	120	162	430	17
Cleveland-Cliff Steamship Company	800	808	6,510	758
Detroit Sulphite Transportation Company	600	833	305	82
Ford Motor Company	6,538	5,660	11,902	522
Inland Steamship Company	800	473	1,485	238
Lakewood Steamship Company	900	826	370	217
Maritime Steamship Company	800	808	264	105
Presque Isle Transportation Company	800	808	1,147	106
Schneider Transportation Company	0	0	597	175
Shenango Furnace Company	834	781	1,417	47
Valley Camp Steamship Company	800	808	986	310
Wyandotte Transportation Company	355	475	1,502	650

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* Water Distance Used. # Not Reported. ø Less than $500.

Analysis 1.7 Water Carrier Groups - Pacific Coastwise and Inland

GROUP CLASS NAME OF COMPANY	ROUTE MILES WATER DIS-TANCE (miles)	ROUTE MILES RAIL DIS-TANCE (miles)	FREIGHT PRO-PORTION OF INVESTMENT (000)	FREIGHT REVENUE 1932 (000)
PACIFIC COASTWISE AND INLAND				
Regional Total	19,685	19,188	$ 14,667	$ 9,797
Common - (Carlot)	14,099	14,439	12,977	9,420
Cargo				
Contract	3,686	2,872	867	196
Private	1,900	1,877	823	182
COMMON - (CARLOT)				
Alaska Steamship Company	6,051	6,051*	$ 4,379	$ 1,526
American Transportation Company	105	99	9	14
Bay Cities Transportation Company	10	15	200	328
Bay Shore Freight Lines	30	40	164	73
Bay Transportation Company	30	29	414	353
Beadle Steamship Company	260	347	#	197
Border Lines Transportation Company	386	425	100	99
Carl Anderson	40	40*	#	2
George Wallenrod	20	15	52	38
Johnson, (A.F.)	190	122	13	1
Kitsap County Transportation Company	82	82*	476	202
Lafferty Transportation Company	20	20*	57	48
Los Angeles Steamship Company	450	594	1,519	2,170
McCormack Steamship Company	2,546	2,784	1,805	2,731
Napa Transportation Company	125	130	.44	36
Paramino Lumber Company	1,025	906	196	136
Puget Sound Freight Lines	408	428	79	239
Puget Sound Navigation Company	205	187	2,905	832
Rio Vista Lighterage Company	40	40*	82	92
Salem Navigation Company	72	57	31	21
Sudden Steamship Company	570	594	50	68
Tahoe Transportation Company	36	36*	#	14
Vashon Navigation Company	9	9*	1	2
Washington Route	165	165*	12	48
Wills Navigation Company	1,200	1,200*	60	50
Wilmington Transportation Company	24	24*	329	99
CONTRACT - (CARGO)				
Coastwise Steamship and Barge Line	986	1,032	$ 119	$ 12
Freeman (S.S.) and Sons	400	400*	462	113
Griffiths (James) and Sons	2,300	1,440	286	71
PRIVATE - (CARGO)				
E. K. Wood Lumber Company	1,125	499	$ 551	$ 139
Moore Mill and Lumber Company	700	1,255	193	28
Red Collar Line	45	93	66	9
Wahkiakum Transportation Company	30	30	13	6

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* Water Distance Used. # Not Reported.

Analysis 1.8 Pipe Line Carrier Groups

	ROUTE MILES			INVESTMENT	REVENUES	
	TOTAL	TRUNK	GATHERING	1932 (000)	1930 (000)	1932 (000)
UNITED STATES - TOTAL	92,783	51,405	41,378	$ 763,942	$ 205,932	$211,789
NORTH ATLANTIC COAST CARRIERS	14,723	5,283	9,440	54,845	8,623	9,294
Bradford Transit Co.	765	-	765	1,844	930	595
Eureka Pipe Line Co.	4,595	166	4,429	10,921	1,885	1,309
Imperial Pipe Line Co. Ltd.	297	297	-	2,066	560	576
National Transit Co.	3,575	1,226	2,349	8,948	1,620	1,520
New York Transit Co.	307	120	187	1,018	282	203
Northern Pipe Line Co.	629	629	-	2,984	288	211
Pure Oil Pipe Line Co. - Pennsylvania	57	57	-	51	99	66
South West Pennsylvania Pipe Lines	1,902	311	1,591	4,398	699	658
Sun Pipe Line, Inc.	90	90	-	754	-	190
Susquehanna Pipe Line Co.	548	548	-	5,264	-	1,998
Tide Water Pipe Co. Ltd.	1,363	1,244	119	9,556	1,560	1,160
Tuscarora Oil Co., Ltd.	595	595	-	7,051	701	807
GREAT LAKES - SOUTHWEST CARRIERS	44,782	23,870	20,912	$ 319,191	$ 72,847	$100,144
Ajax Pipe Line Co.	785	785	-	13,187	173	6,606
Buckeye Pipe Line Co.	7,191	1,494	5,697	20,692	4,209	2,951
Great Lakes Pipe Line Co.	1,237	1,237	-	15,779	-	4,551
Gulf Pipe Line Co. of Penna	783	783	-	12,396	-	4,706
Illinois Pipe Line Co.	5,637	1,908	3,729	43,567	11,110	9,489
Indiana Pipe Line Co.	816	650	166	5,242	1,547	606
*Maryland Pipe Line Co.	-	-	-	158	-	-
Phillips Pipe Line Co.	764	764	-	12,604	-	3,771
Pure Oil Pipe Line Co. - Ohio	502	44	458	2,258	1,033	2,029
Shell Pipe Line Corporation	3,985	3,367	618	51,536	22,986	20,259
Sinclair Prairie Pipe Line Co. (Okla.)	11,821	5,886	5,935	21,477	632	10,541
Sinclair Prairie Pipe Line Co. (Tex.)	2,699	1,038	1,661	11,663	-	2,578
Southern Pipe Line Co.	261	261	-	2,083	523	238
Stanolind Pipe Line Co.	7,297	4,649	2,648	89,179	23,751	23,869
Sun Oil Line Co.	98	98	-	680	-	206
Texas - Empire Pipe Line Co. (Okla.)	906	906	-	16,690	6,883	7,744
SOUTHWEST GULF CARRIERS	33,278	22,252	11,026	$ 389,905	$ 124,463	$102,351
Arkana Transit Corporation	32	32	-	226	40	19
Arkansas Pipeline Corporation	141	67	74	1,060	-	1,053
Atlantic Pipe Line Co.	1,219	922	297	20,515	5,224	6,851
Atlas Pipeline Co., Inc.	150	57	93	1,361	-	885
Consolidated Pipe Line Co.	242	151	91	1,180	-	157
Continental Pipe Line Co.	1,189	463	726	7,562	1,953	1,471
Empire Pipeline Co.	964	495	469	9,414	4,017	3,285
Gulf Pipe Line Co.	4,495	3,426	1,069	54,469	21,890	10,655
Gulf Pipe Line Co. of Okla.	1,471	734	737	12,594	5,134	4,138
Humble Pipe Line Co.	6,533	4,252	2,281	86,793	31,736	24,225
Magnolia Pipe Line Company	5,935	3,844	2,091	68,278	18,825	14,795
Oklahoma Pipe Line Co.	1,987	1,187	800	23,305	8,586	6,673
Pure - Van Pipe Line Co.	271	222	49	4,910	-	4,128
Spartan Refining Co., Inc.	105	82	23	2,313	-	115
Standard Pipe Line Co., Inc.	1,922	1,557	365	29,221	9,544	7,278
Texas-Empire Pipe Line Co. of Texas	203	203	-	3,362	-	2,949
Texas Pipe Line Co. (Texas)	5,121	3,871	1,250	56,541	15,102	12,096
Texas Pipe Line Co. of Oklahoma	1,298	687	611	6,801	2,412	1,578

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* Not in operation, included only for purposes of investment summary.
Source I.C.C. statistics. Includes all Pipe Line Companies reporting to the Interstate Commerce Commission which operated for the full year 1932.

Analysis 1.9 Lists of Commodity and Business Groups

Rail Carrier Inquiry Commodity Groups

No.	Name
01	Bulk Grain and Beets
02	Other Cereals
03	Cotton, Hay and Tobacco
04	Perishables
05	Miscellaneous Farm Products
06	Live Animals
07	Edible Animal Products
08	Coal and Coke
09	Ores
10	Sand, Stone and Gravel
11	Sulphur and Sulphric Acid
12	Petroleum and Products
13	Forest Products
14	Oil-Vegetable and Animal
15	Iron and Steel
16	All Other Metals
17	Appliances
18	Building Materials
19	Manufactured Food
20	Paper and Products
21	Chemicals
22	Textiles and Leather
23	Glass and Tile
24	Miscellaneous

Shippers' Inquiry Business Groups

No.	Name
01	Automotive Vehicles, Parts, and Accessaries
02	Baking Goods, Candy Confectionery, etc.
03	Barrels, Boxes, Crates, Cooperage, etc.
04	Beverages and Liquors
05	Boats and Marine Equipment and Supplies
06	Books, Periodicals, Printed Matter
07	Boots and Shoes
08	Building and Construction Materials, Brick, Cement, Lumber, Millwork, Piling, Tile, etc.
09	Canned Goods
10	Cereals, Grains, Flour, Meal, Mixed Feeds
11	Chemicals, heavy
12	Coal, Coke and Fuel
13	Cotton, Cotton Linters, etc.
14	Department Store Merchandise, Drugs, Chemicals, Toilet Articles
15	Dry Goods, Clothing, Hats, Millinery, Notions
16	Fresh Fruits, Vegetables, and Produce
17	Furniture, Carpets, Household Goods, House and Office Furniture
18	Groceries
19	Iron and Steel, structural
20	Iron and Steel Articles and Hardware
21	Leather and Leather Goods
22	Livestock and Poultry
23	Machines, Machinery Appliances, Vehicles, Implements
24	Metals, Nonferrous
25	Musical Instruments and Supplies
26	Ores and Concentrates
27	Packing House Products
28	Paints, Varnishes, Gums Shellac
29	Paper, Paper Products
30	Petroleum, crude, refined, and Products
31	Porcelain, China, Enamelware
32	Plumbing and Heating Supplies and Fixtures
33	Rubber, Rubber Articles, Tires
34	Sand, Stone, and Gravel
35	Seed, Nursery and Florists Material
36	Sugar, Sirups and Molasses
37	Textiles
38	Tobacco, Tobacco Products
39	Vegetable, Oils, Meal, and Cake
40	Miscellaneous Commodities

I.C.C. Freight Commodity Groups Years 1920 through 1927

No.	Name
1	Wheat
2	Corn
3	Oats
4	Other Grain
5	Flour and Meal
6	Other Mill Products
7	Hay, Straw and Alfalfa
8	Tobacco
9	Cotton
10	Cotton Seed and Products, except Oil
11	Citrus Fruits
12	Other Fresh Fruits
13	Potatoes
14	Other Fresh Vegetables
15	Dried Fruits and Vegetables
16	Other Products of Agriculture
17	Horses and Mules
18	Cattle and Calves
19	Sheep and Goats
20	Hogs
21	Fresh Meats
22	Other Packing-House Products
23	Poultry
24	Eggs
25	Butter and Cheese
26	Wool
27	Hides and Leather
28	Other Products of Animals
29	Anthracite Coal
30	Bituminous Coal
31	Coke
32	Iron Ore
33	Other Ores and Concentrates
34	Base Bullion and Matte
35	Clay, Gravel, Sand and Stone
36	Crude Petroleum
37	Asphaltum
38	Salt
39	Other Products of Mines
40	Logs, Posts, Poles and Cordwood
41	Ties
42	Pulp Wood
43	Lumber, Timber, Box Shooks, Staves and Headings
44	Other Products of Forests
45	Refined Petroleum and its Products
46	Vegetable Oils
47	Sugar, Sirup, Glucose and Molasses
48	Boats and Vessel Supplies
49	Iron, pig and bloom
50	Rails and Fastenings
51	Bar and Sheet Iron, Structural Iron and Iron Pipe
52	Other Metals, pig, bar, and sheet
53	Castings, Machinery and Boilers
54	Cement
55	Brick and Artificial Stone
56	Lime and Plaster
57	Sewer Pipe and Drain Tile
58	Agricultural Implements and Vehicles other than Automobiles
59	Automobiles and Autotrucks
60	Household Goods and Second-hand Furniture
61	Furniture (new)
62	Beverages
63	Ice
64	Fertilizers (all kinds)
65	Paper, Printed Matter and
65	Books
66	Chemicals and Explosives
67	Textiles
68	Canned Goods (all canned food products)
69	Other Manufactures and Miscellaneous

SECTION I. DESCRIPTION OF UNDERLYING SURVEYS

Analysis 1.10 Reconciliation between Freight Traffic Report Commodity Groups, Rail Carrier Inquiry Commodity Groups, Shippers' Inquiry Business Groups and I.C.C. former and present Freight Commodity Classes

FREIGHT TRAFFIC REPORT COMMODITY GROUPS NO.	NAME	RAIL CARRIER INQUIRY GROUP NO.	SHIPPERS' INQUIRY BUSINESS GROUP NO.	I.C.C. FREIGHT COMMODITY CLASSES (1920-1927)	(PRESENT)
	I ROUGH MATERIAL				
10	Sand, Stone and Gravel	10*	08*,34	35*	350,351,352
11	Timber	13*	08*,29*	40*,41,42,44*	400,401,410,420,443*
12	Rough Vegetables	01*	16*	16*	163
19	Miscellaneous	24*	40*	69*	701*
	II RAW MATERIAL				
20	Grain	01*,02*,05*,14*	10*,35*	1,2,3,4,10*,16*	10,20,30,40,41,42,100,162,164*
21	Animal Feeds	02*,05*,14*	10*,27*,35*,39*	6*,10*,16*,28*	61,101,160,164*,282*
22	Fresh Vegetables	04*	16*	11,12,14*	110,111,120,121,122,123,124,125,126, 127,128,142,143
23	Live Animals	06*	22	17,18,19,20,23*, 28*	170,180,181,190,191,200,201,230,281
24	Dry Fuels	08,13*	12	29,30,31,40*	290,300,310,402
25	Crude Liquids	12*	30*	36,45*	360,451
26	Ores	09,11*	11*,26	32,33,39*	320,330,331,332,333,391,392
27	Lumber	13*,17*	03,08*	43,44*,69*	430,431,432,443*,697
28	Fertilizer	05*,11*	11*,27*	28*,39*,64	282*,390,640
29	Miscellaneous	24*	40*	69*	701*
	III SEMIPROCESSED MATERIAL				
30	Primary Metals	15*,16*	20*,24*	49,52*	490,491,520,522,523
31	Fibres	03,05*,06*,13*	08*,10*,13,35*, 37*,38*	7,8,9,16*,26,44*	70,71,80,90,91,164*,260,443*
32	Hides	05*,06*	21*,27*	27*,28*	270,282*
33	Primary Rubber	13*	33*	44*	442
34	Salt	19*	18*	38	380
35	Ice	19*	40*	63	630
36	Primary Paper	20*	29*	65*,69*	650,694
37	Horticultural	05*	35*	16*	164*
38	Scrap	05*,13*,15*	08*,20*,27*,35*	16*,28*,44*,69*	164*,282,443*,692,693
39	Miscellaneous	24*	40*	69*	701*
	IV NECESSARIES				
40	Dry Vegetables	04*,05*	16*,35*	13,14*,15*,16*	130,140,141,150,151,152,161,164*
41	Edible Liquids	05*,14*,19*	04,27*,36*,39*, 40*	28*,46*,47*,62	380,382*,460,462,471,472,620
42	Edible Animal Products	05*,07	27*	21,22,23*,24,25 28*	210,220,221,222,231,240,250,251,282*
43	Manufactured Foods	05*,19*,24*	02,09,35*,36	16*,47*,68,69*	164*,470,680,701*
44	Processed Cereals	02*	10*,18*	5,6*	50,51,52,60
45	Furnishings	17*,23*,24*	17,18*,31	61,69*	610,611,700,701*
46	Textiles and Leather	05*,22	21*,27*,37*	27*,28*,67	271,282*,670,671
47	Clothing	24*	07,15	69*	701*
49	Miscellaneous	24*	40*	69*	701*
	V AUXILIARIES				
50	Masonry	10*,18,20*,23*	08*,29*	35*,54,55,56,57, 69*	353,540,550,551,552,560,561,570,695, 696,699
51	Power	12*	30*	45*	450
52	Lubricants	12*	30*	45*	452
53	Kindlers	24*	40*	69*	701*
54	Preservatives	12*,14*,21*	28,30*,39*	37,44*,45*,46*,69*	370,440,441,453,461,691
55	Chemicals, in tanks	11*,21*	11*	66*	660,661
56	Chemicals, packaged	05*	27*	28*	282*
57	Cleansers and Adhesives	05*,24*	18*,27*	28*,69*	282*,698
58	Explosives	21*	40*	66*	662
59	Miscellaneous	24*	40*	69*	701*
	VI ACCESSORIES				
60	Ferrous Metal	15*	19,20*	50,51	500,510,511,512,513
61	Non-ferrous Metals	16*	24*	52*	521
62	Rubber	17*	33*	59*	593
63	Tools and Appliances	17*,24*	20*,23*,40*	53*,58*,69*	530*,580*,701*
64	Machinery and Parts	17*	23*	53*,58*	530*,580*
65	Vehicles and Parts	15*,17*	01,23*	58*,59*	581,582,583,590,591,592
66	Stationery, printing	20*	29*	65*	651
67	Personal	24*	38*	69*	690
68	Amusement	24*	25	69*	701*
69	Miscellaneous	24*	05,06,14,32	48,69*	701*

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* Indicates that commodity group number is also shown on one or more other lines in the same column because the specific commodities included in such group are assigned to two or more Freight Traffic Report Commodity Groups. For detailed reconciliation see the appendix.

SECTION 3. TYPICALITY OF 1932 STATISTICS

Analysis 3.1 Chronological Indices of the Extent of Rail Operations

	BASE YEAR 1932 AGGREGATE	PERCENTAGE RELATIONSHIP TO 1932: 12 YEAR AVERAGE	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933
AGGREGATE STATISTICS													
Reporting Carriers	160*	166	178	179	175	174	172	167	169	162	156	155	150
Route Miles	242,821	99	97	98	98	98	98	99	100	100	100	100	99
Schedules (Thousands)#	5,333	-	-	-	-	-	-	-	-	-	-	-	-
Schedule Miles (Millions)	391	142	142	164	154	157	162	156	154	157	138	119	101
Schedule Hours (Thousands)	24,407	175	199	234	207	206	210	196	185	184	154	125	99
Vehicles Originated (Thousands)	27,147	158	152	177	170	178	185	179	180	184	161	131	102
Tons Originated (Millions)	646	139	158	198	184	193	207	198	199	207	178	138	108
Locomotive Miles (Millions)	398	147	148	171	160	163	169	162	160	163	142	121	100
Vehicle Miles (Millions)													
Total	17,066	142	116	146	143	153	163	162	166	170	151	127	103
Loaded	10,333	148	134	158	153	163	171	168	172	176	152	127	103
Empty	6,733	133	101	127	127	138	151	153	156	161	148	127	102
Ton Miles (Billions)													
Gross∅	747	143	122	148	143	153	164	163	165	171	151	127	104
Vehicle	648	144	124	150	143	156	167	165	168	174	153	128	104
Net (r)	236	160	145	176	166	177	190	183	185	191	164	132	107
Equated	456	154	142	172	163	171	181	175	174	181	156	127	103
AVERAGE STATISTICS													
Density per Route Miles													
Schedule Miles	1,610	147	150	174	162	165	171	163	160	162	141	121	101
Locomotive Miles	1,637	148	152	176	164	166	172	164	160	162	141	121	101
Vehicle Miles - Loaded	42,554	150	138	162	157	166	175	170	172	175	152	127	104
Gross Ton Miles (Thousands)	3,075	144	126	152	147	156	167	164	166	170	150	126	105
Vehicle Ton Miles (Thousands)	2,670	146	127	154	149	159	170	167	169	173	153	127	105
Net Ton Miles (Thousands) (r)	970	162	150	181	170	181	194	186	186	191	164	132	108
Equated Ton Miles (Thousands)	1,877	156	147	178	168	175	185	178	175	181	156	127	104
Density per Schedule Mile													
Locomotive Miles	1	100	101	101	101	101	100	100	100	100	100	100	100
Vehicle Miles - Loaded	26	102	92	93	96	100	102	104	108	109	107	105	103
Gross Ton Miles	1,910	98	84	88	90	94	98	101	104	105	106	105	104
Vehicle Ton Miles	1,660	100	85	89	91	96	100	102	106	107	108	106	104
Net Ton Miles - Revenue	600	110	99	104	105	109	113	113	116	118	116	109	107
Equated Ton Miles	1,170	105	98	102	103	106	108	109	109	111	110	105	103
Density per Vehicle Mile - Loaded													
Gross Ton Miles	72	96	91	95	94	94	96	97	96	97	102	100	101
Vehicle Ton Miles	63	98	92	96	95	96	98	98	98	99	104	100	101
Net Ton Miles - Revenue	23	108	108	113	108	109	111	109	108	109	111	104	103
Equated Ton Miles	44	104	106	111	107	105	106	104	101	103	106	100	100
Density per Schedule Hour													
Gross Ton Miles	30,600	81	62	64	69	74	78	83	89	93	98	102	105
Vehicle Ton Miles	26,570	86	62	64	70	76	79	84	91	94	99	102	105
Net Ton Miles - Revenue	9,650	91	73	76	80	86	90	93	100	103	106	106	107
Equated Ton Miles	18,670	90	72	74	79	83	86	89	94	98	101	102	104

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* In 1932 the 160 reporting carriers were grouped into 111 systems.
# Trains.
∅ Including locomotive.
(r) Revenue only.

Analysis 3.2 Chronological Indices of Rail Freight Service Income

	BASE YEAR	PERCENTAGE RELATIONSHIP TO 1932											
	1932 AGGREGATE (000)	12 YEAR AVERAGE	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933
REVENUE*													
Freight - Total	$2,442,881	166	163	188	177	186	196	189	191	197	167	133	102
Rough Material	62,354	202	-	-	-	-	-	-	301	296	256	174	88
Raw Material	1,202,727	142	-	-	-	-	-	-	181	184	158	129	129
Semiprocessed Material	110,376	153	-	-	-	-	-	-	201	210	170	129	109
Necessaries	291,454	121	-	-	-	-	-	-	136	137	130	120	104
Auxiliaries	481,104	142	-	-	-	-	-	-	176	184	162	132	99
Accessories	129,282	246	-	-	-	-	-	-	375	410	284	180	127
L.C.L.	252,427	151	-	-	-	-	-	-	203	204	170	135	91
Adjustment# (Dr.)	86,843	138	-	-	-	-	-	-	172	174	151	127	104
Switching	66,501	163	152	172	163	178	196	189	198	203	167	132	110
Other	49,999	119	82	90	92	90	90	152	142	194	164	133	97
Total Revenues	$2,559,380	165	161	186	175	184	194	189	191	197	167	133	102
EXPENSES													
Maintenance	$ 785,184	183	196	231	206	209	218	211	204	211	176	139	97
Roadway	228,146	206	208	239	231	238	254	254	246	251	203	152	94
Power	204,532	187	201	253	215	215	223	213	201	206	173	137	100
Structures	12,175	241	231	305	287	289	300	284	286	296	242	161	100
Locomotives	192,357	183	199	250	210	211	218	208	196	169	169	136	100
Cars	338,750	165	185	212	183	185	189	179	175	184	158	129	98
Owned	252,048	186	223	253	213	214	218	203	196	207	170	133	97
Hired	86,702	100	68	86	88	95	99	105	110	114	119	118	100
Station	9,334	220	206	257	243	246	278	285	264	283	231	160	92
Wharves and Docks	4,422	192	185	221	205	224	238	259	199	219	193	159	102
Transportation	$ 809,406	172	192	213	195	194	200	195	189	191	166	136	95
Train	342,712	183	221	243	213	209	213	204	196	195	167	136	98
Movement	339,881	183	221	243	213	209	213	204	196	195	167	136	98
Supplies	2,831	138	123	133	140	137	151	154	158	172	160	136	96
Assemblage	299,497	167	170	196	183	185	195	192	187	194	169	136	94
Movement	270,513	170	175	202	187	190	200	196	190	196	169	137	94
Supplies	28,984	138	123	133	140	137	151	154	158	172	160	136	96
Floatage	12,026	169	165	183	180	190	202	198	195	202	177	143	94
Station Agency	155,171	160	172	185	180	180	183	180	176	176	158	134	90
Other Operations	$ 5,889	205	224	275	243	259	246	240	241	216	175	145	94
Water Operations	3,051	244	289	357	326	306	299	295	271	248	198	156	90
Miscellaneous	2,838	180	182	222	190	229	212	205	222	196	164	138	97
Overhead	$ 389,849	120	105	116	117	124	133	133	136	140	128	115	92
Administration	178,085	111	96	102	105	110	117	122	123	127	125	118	92
Traffic	63,238	106	87	92	95	101	107	114	119	124	124	119	90
General	114,847	114	102	108	111	116	122	126	124	128	125	118	93
Loss and Damage Freight	18,459	178	231	210	198	213	198	196	192	206	180	132	83
Taxes	193,305	128	114	128	128	136	148	142	148	151	130	112	93
TOTAL EXPENSES	$1,990,328	166	177	202	185	187	195	190	185	189	163	133	93
NET RESULTS	P $ 569,052	161	104	128	141	171	191	184	211	225	180	132	125

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* Detailed information as to commodity classification was not available for the years 1922 to 1927 inclusive. Indices in 12 year average column for freight are based on 6 years.

# To adjust for differences between I.C.C. Commodity statistics and I.C.C. Account 101.

Source - Figures in Base Year - 1932 column - cover reporting roads only.

Analysis 3.3 Chronological Indices of Rail-Revenue per Net Ton Mile of Commodity Groups - Carload Traffic Only

RATING GROUP COMMODITY GROUP	REVENUE	REVENUE PER NET TON MILE (MILLS)							
	1932 (000)	6 YEAR AVERAGE	1928	1929	1930	1931	1932	1933	1934ø
ALL GROUPS	$2,280,897	10.45	10.71	10.60	10.43	10.41	10.38	9.97	9.65
I ROUGH MATERIAL	$ 62,453	10.39	10.27	10.38	10.51	10.71	10.80	9.47	9.36
10 Sand, Stone, Gravel	40,325	11.25	11.54	11.46	11.23	11.07	10.98	10.48	9.94
11 Timber	18,666	9.00	8.56	8.98	9.30	9.76	10.07	7.98	8.31
12 Rough Vegetables	3,462	13.78	14.31	14.06	14.47	13.75	13.49	12.76	13.83
19 Miscellaneous*	-	-	-	-	-	-	-	-	-
II RAW MATERIAL	$1,204,628	8.55	8.78	8.57	8.51	8.43	8.58	8.17	7.79
20 Grain	120,910	12.31	13.42	13.07	13.18	12.23	10.91	10.78	10.56
21 Animal Feeds	27,803	8.38	8.87	8.63	8.26	8.15	8.19	7.85	7.45
22 Fresh Vegetables	184,383	13.14	12.97	13.08	13.21	12.98	13.64	13.04	12.59
23 Live Animals	75,656	15.86	15.39	15.20	15.43	16.41	16.54	16.70	17.12
24 Dry Fuels	618,612	6.92	7.13	7.03	6.91	6.79	6.89	6.64	6.26
25 Crude Liquids	36,190	11.65	11.22	12.66	12.17	10.55	10.62	9.67	9.79
26 Ores	39,306	7.23	7.06	7.02	7.10	7.19	8.95	7.78	7.23
27 Lumber	82,545	9.73	9.78	9.77	9.79	9.62	9.68	9.59	9.17
28 Fertilizer	19,223	10.86	11.39	10.92	10.71	10.60	10.63	10.62	9.81
29 Miscellaneous*	-	-	-	-	-	-	-	-	-
III SEMIPROCESSED MATERIAL	$ 110,550	12.98	12.89	12.91	12.61	13.45	13.93	12.58	16.81
30 Primary Metals	10,050	7.87	7.77	7.98	7.87	8.17	8.53	7.02	6.90
31 Fibres	43,537	17.89	18.85	19.04	18.22	18.35	16.57	15.00	13.43
32 Hides	5,324	14.38	14.70	14.48	14.20	14.10	14.23	14.55	14.00
33 Rubber	2,772	14.01	15.62	14.98	14.06	13.14	13.30	12.45	11.87
34 Salt	13,788	11.62	11.29	11.54	11.61	11.39	12.04	11.94	10.88
35 Ice	1,671	23.09	23.80	23.31	22.61	23.09	22.65	21.53	22.17
36 Primary Paper	19,002	15.42	15.55	16.07	15.02	14.86	15.70	15.35	15.88
37 Horticultural	1,957	12.78	13.96	12.91	12.43	12.92	12.48	11.87	11.02
38 Scrap	12,450	11.12	11.22	11.12	9.62	11.45	12.99	12.84	12.25
39 Miscellaneous*	-	-	-	-	-	-	-	-	-
IV NECESSARIES	$ 291,915	12.98	13.32	13.21	13.01	13.02	12.64	12.46	12.29
40 Dry Vegetables	59,131	13.44	13.57	13.41	13.62	14.05	12.85	12.92	13.79
41 Edible Liquids	16,694	10.64	10.81	10.75	10.09	9.94	10.48	11.65	12.16
42 Edible Animal Products	97,005	16.62	16.30	16.16	16.46	16.94	17.28	16.75	15.74
43 Manufactured Foods	54,764	13.60	14.35	14.05	13.89	13.60	13.06	12.12	11.35
44 Processed Cereals	41,430	7.87	8.40	8.27	8.11	7.75	7.24	7.27	7.16
45 Furnishings	15,149	16.95	18.61	18.40	16.58	15.93	16.32	14.50	14.10
46 Textiles and Leather	7,743	17.23	17.30	17.02	16.97	16.55	17.75	18.06	16.59
47 Clothing*	-	-	-	-	-	-	-	-	-
49 Miscellaneous*	-	-	-	-	-	-	-	-	-
V AUXILIARIES	$ 481,864	13.61	13.44	13.60	13.62	13.74	13.87	13.50	12.85
50 Masonry	69,821	11.25	10.91	11.01	10.97	11.32	12.38	12.34	11.56
51 Power	192,065	16.06	16.88	16.74	16.41	16.17	15.25	14.41	13.52
52 Lubricants	15,648	12.75	12.78	13.19	12.92	12.46	12.47	12.59	12.64
53 Kindlers*	-	-	-	-	-	-	-	-	-
54 Preservatives	14,964	13.30	14.38	13.95	13.08	12.81	12.50	12.44	12.22
55 Chemicals, in tanks	4,685	14.74	14.68	15.13	14.71	14.40	14.74	14.67	14.39
56 Chemicals, packaged	797	16.37	17.00	16.54	15.70	15.87	16.69	16.67	14.41
57 Cleansers and Adhesives	7,208	14.88	15.33	15.24	15.11	15.08	14.94	13.14	12.83
58 Explosives	2,475	36.88	36.64	38.02	37.35	36.06	37.84	34.05	30.62
59 Miscellaneous#	174,201	13.00	12.83	12.99	12.95	12.96	13.26	13.21	12.74
VI ACCESSORIES	$ 129,486	17.31	18.16	17.62	16.86	16.71	16.79	16.29	16.32
60 Ferrous Metals	61,677	14.01	13.85	13.90	14.22	14.18	14.45	13.80	13.49
61 Nonferrous Metals	694	23.98	27.92	26.47	22.05	19.23	24.14	20.65	17.43
62 Rubber	3,630	18.52	18.31	18.59	20.07	20.20	17.96	14.64	11.83
63 Tools and Appliances	-	-	-	-	-	-	-	-	-
64 Machinery and Parts	12,802	17.32	17.21	17.48	17.43	16.94	17.38	17.22	16.56
65 Vehicles and Parts	39,699	26.40	30.44	26.81	23.96	24.03	24.05	24.20	23.57
66 Stationery, Printing	7,497	11.19	10.94	11.03	11.10	11.22	11.77	11.38	11.12
67 Personal	3,487	16.31	13.25	15.81	16.98	17.75	18.24	16.66	16.76
68 Amusement*	-	-	-	-	-	-	-	-	-
69 Miscellaneous*	-	-	-	-	-	-	-	-	-

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* Included in No. 59.

# Includes all Miscellaneous Manufactures, I.C.C. Commodity Group 701.

ø Not included in 6 year average; fourth quarter 1934 estimated.

Source - I.C.C. Commodity Statistics.

Analysis 3.4 Chronological Indices of Rail Maintenance Unit Costs

FACILITY UNIT	BASE YEAR 1932 AGGREGATE	PERCENTAGE RELATIONSHIP TO 1932											
		12 YEAR AVERAGE	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933
ROADWAY	$ 228,146*												
Revenue Ratio	69.01%	125	129	128	132	130	139	135	129	127	122	115	92
Route Mile	$ 939.56	208	214	245	236	242	259	257	247	250	202	152	95
Schedule	43.33	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	8.41	130	137	135	135	133	137	142	137	136	126	116	92
Net Ton (revenue)	$ .3530	148	131	121	126	123	123	128	124	217	114	110	87
Schedule Hour	9.3476	118	105	102	111	115	121	130	133	136	131	122	94
Schedule Mile	.5834	141	142	141	145	147	152	158	154	155	143	126	94
Vehicle Mile	.0221	139	155	153	150	146	148	151	143	142	137	119	64
Gross Ton Mile	$ .00306	144	170	161	161	155	154	157	149	146	134	120	90
Net Ton Mile	.00968	129	143	135	139	134	134	139	121	131	124	115	88
Equated Ton Mile	.00501	131	146	138	141	139	141	145	142	139	130	120	91
STATION	$ 9,334*												
Revenue Ratio	.37%	132	127	138	138	132	151	149	138	143	138	119	89
Route Mile	$ 38.44	223	212	263	249	251	283	289	265	282	230	160	93
Schedule	1.77	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	.34	139	136	145	143	138	150	159	147	153	143	122	90
Net Ton (revenue)	$ .0144	158	130	129	132	127	134	143	132	244	129	116	85
Schedule Hour	.3824	126	104	110	117	119	132	145	143	153	149	129	92
Schedule Mile	.0239	151	142	152	153	152	166	177	166	175	163	133	92
Vehicle Mile	.0009	244	256	267	256	256	267	267	256	267	256	222	189
Gross Ton Mile	$ .00012	158	175	183	175	167	175	183	167	175	155	133	92
Net Ton Mile	.00040	140	143	148	148	140	148	158	130	150	143	123	88
Equated Ton Mile	.00020	146	145	145	145	140	150	160	150	155	145	125	90
WHARVES	$ 4,422*												
Revenue Ratio	.17%	117	111	117	117	122	128	133	106	112	117	117	100
Route Mile	$ 18.21	194	190	226	209	228	242	261	200	219	192	158	103
Schedule	.84	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	.16	121	121	125	120	126	128	144	110	119	120	121	100
Net Ton (revenue)	$ .0068	137	115	111	111	115	114	130	100	175	107	114	94
Schedule Hour	.1812	110	93	95	99	108	113	132	107	119	125	127	103
Schedule Mile	.0113	131	126	130	128	138	142	160	124	135	136	131	102
Vehicle Mile	.0004	150	150	150	150	150	150	175	125	125	150	125	100
Gross Ton Mile	$ .00006	135	152	150	143	147	145	160	122	128	128	127	98
Net Ton Mile	.00019	100	125	120	120	125	120	140	105	110	115	115	95
Equated Ton Mile	.00010	118	120	120	120	120	130	140	110	120	120	120	90
POWER	$ 204,532*												
Revenue Ratio	8.08%	113	125	136	123	117	121	113	106	105	104	103	99
Route Mile	$ 842.32	188	206	260	220	220	227	215	202	206	169	137	101
Schedule	38.85	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	7.54	118	132	143	126	121	120	119	112	112	108	105	98
Net Ton (revenue)	$ .3165	134	127	128	117	112	108	107	101	179	97	99	93
Schedule Hour	8.3800	107	101	108	104	104	106	108	108	112	112	110	101
Schedule Mile	.5230	128	138	150	135	133	133	132	126	127	122	113	100
Vehicle Mile	.0198	126	149	162	140	132	130	126	117	117	118	108	97
Gross Ton Mile	$ .00274	135	169	177	155	145	140	135	126	125	119	112	100
Net Ton Mile	.00868	117	139	144	130	122	118	116	99	108	106	104	94
Equated Ton Mile	.00449	120	147	147	131	126	123	121	118	114	111	108	99
VEHICLES	$ 338,750*												
Revenue Ratio	13.38%	100	115	114	104	101	103	95	92	93	95	97	96
Route Mile	$ 1,395.06	166	190	217	187	189	192	181	176	184	157	129	98
Schedule	64.34	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	12.48	104	121	120	107	104	102	100	97	100	98	99	96
Net Ton (revenue)	$ .5242	118	117	107	99	96	91	90	88	89	88	93	90
Schedule Hour	13.8792	94	93	91	88	90	90	91	95	100	102	104	98
Schedule Mile	.8663	113	127	125	115	114	113	111	110	114	112	107	98
Vehicle Mile	.0328	111	138	135	119	114	110	106	102	105	107	102	94
Gross Ton Mile	$ .00454	116	151	143	127	121	115	110	105	108	115	102	94
Net Ton Mile	.01438	103	128	120	110	105	100	98	86	96	96	98	92
Equated Ton Mile	.00743	107	130	123	112	108	104	102	101	102	101	102	95

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* Thousands.

Analysis 3.5 Chronological Indices of Rail Transportation Unit Costs

FUNCTION UNIT	BASE YEAR 1932 AGGREGATE	PERCENTAGE RELATIONSHIP TO 1932											
		12 YEAR AVERAGE	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933
AGENCY	$ 155,171*												
Revenue Ratio	6.13%	97	107	100	103	98	94	96	92	90	95	101	88
Route Mile	$ 639.03	161	176	189	184	184	186	182	176	176	158	134	90
Schedule	29.47	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	5.72	101	113	104	106	101	99	100	97	96	99	102	88
Net Ton (revenue)	$ .2401	114	103	93	98	93	88	91	88	85	89	97	83
Schedule Hour	6.3576	91	87	79	87	87	87	92	95	96	103	108	90
Schedule Mile	.3968	109	118	109	113	111	107	111	110	109	112	110	90
Vehicle Mile	.0150	107	128	118	118	111	106	107	103	101	108	106	87
Gross Ton Mile	$ .00208	112	141	125	126	118	111	111	107	104	105	107	86
Net Ton Mile	.00659	100	118	105	108	102	96	98	95	92	97	102	84
Equated Ton Mile	.00340	103	121	107	110	105	101	103	101	98	91	105	87
ASSEMBLAGE	$ 299,497*												
Revenue Ratio	11.83%	101	105	105	104	101	101	102	98	98	101	103	92
Route Mile	$ 1,233.41	168	175	201	187	188	199	194	188	193	168	136	95
Schedule	56.88	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	11.04	105	112	111	107	104	105	107	104	105	105	104	92
Net Ton (revenue)	$ .4635	120	102	99	99	96	94	97	94	93	94	99	87
Schedule Hour	12.2709	95	85	84	88	90	93	98	101	105	109	109	95
Schedule Mile	.7659	114	116	116	115	114	116	119	118	120	119	113	94
Vehicle Mile	.0290	113	126	125	119	114	114	114	109	110	114	107	91
Gross Ton Mile	$ .00405	117	139	135	127	121	119	118	114	114	112	108	90
Net Ton Mile	.01271	104	117	111	110	105	103	105	101	101	103	103	88
Equated Ton Mile	.00657	107	119	113	112	108	108	109	108	107	96	107	91
TRAIN	$ 342,712*												
Revenue Ratio	13.54%	111	137	131	121	114	110	108	103	99	100	102	96
Route Mile	$ 1,411.38	185	227	249	218	213	216	206	196	195	166	204	99
Schedule	65.09	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	12.63	115	145	137	125	117	115	114	109	106	104	103	96
Net Ton (revenue)	$ .5303	131	132	123	116	108	103	103	98	94	94	98	91
Schedule Hour	14.0415	104	111	104	103	101	101	104	106	106	108	109	99
Schedule Mile	.8764	125	151	143	134	129	127	126	123	120	118	112	98
Vehicle Mile	.0332	123	164	155	139	128	124	121	114	111	113	107	95
Gross Ton Mile	$ .00459	128	180	164	148	136	129	126	119	114	111	107	94
Net Ton Mile	.01454	114	152	137	128	118	112	111	106	102	102	103	92
Equated Ton Mile	.00752	117	155	140	130	122	117	116	113	108	95	107	91
FLOATAGE	$ 12,026*												
Revenue Ratio	.48%	104	104	98	104	104	104	106	102	104	108	108	92
Route Mile	$ 49.53	171	170	187	184	194	206	200	195	202	176	142	94
Schedule	2.28	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	.44	107	109	103	106	107	109	110	108	110	110	109	92
Net Ton (revenue)	$ .0186	121	99	92	98	98	98	100	98	98	99	103	87
Schedule Hour	.4927	97	83	78	87	92	96	101	105	110	115	114	94
Schedule Mile	.0308	116	113	108	113	117	120	123	122	125	125	118	94
Vehicle Mile	.0012	115	123	115	115	115	115	115	115	115	115	108	92
Gross Ton Mile	$ .00016	117	133	122	122	122	122	122	116	116	116	120	89
Net Ton Mile	.00051	107	114	105	109	109	107	109	105	107	109	109	88
Equated Ton Mile	.00026	111	118	107	111	111	111	114	114	114	100	114	93

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* Thousands.

Analysis 3.6 Chronological Indices of Rail Overhead Unit Costs

FUNCTION UNIT	BASE YEAR 1932 AGGREGATE	12 YEAR AVERAGE	PERCENTAGE RELATIONSHIP TO 1932										
			1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933
OVERHEAD ø	$ 389,849*												
Revenue Ratio	15.23%	73	65	62	67	67	69	70	71	71	77	86	91
Route Mile	$ 1,605.50	121	108	118	120	126	136	134	136	139	127	114	93
Schedule	73.10	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	14.38	76	69	65	69	69	72	74	75	76	79	88	90
Net Ton (revenue)	$ .6033	86	67	58	64	64	64	67	68	67	72	83	85
Schedule Hour	15.9728	68	53	49	57	60	63	67	73	76	83	92	93
Schedule Mile	.9969	82	72	68	74	76	80	82	85	86	90	95	92
Vehicle Mile	.0377	80	78	74	77	76	78	79	79	79	87	90	89
Gross Ton Mile	$ .00522	84	86	78	82	81	81	82	82	82	85	91	89
Net Ton Mile	.01654	75	73	66	71	70	70	72	73	73	78	87	87
Equated Ton Mile	.00855	77	74	67	72	72	74	76	78	77	74	90	89
ADMINISTRATION	$ 178,085*												
Revenue Ratio	6.96%	71	60	55	60	60	60	65	64	64	75	89	90
Route Mile	$ 733.40	113	99	105	108	112	119	123	123	126	125	118	93
Schedule	33.40	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	6.58	70	63	58	62	62	63	68	70	69	78	90	90
Net Ton (revenue)	$ .2756	80	61	52	57	57	57	61	62	61	70	85	85
Schedule Hour	7.2965	64	48	44	51	54	56	62	66	69	81	95	92
Schedule Mile	.4554	76	66	60	66	68	70	75	77	78	88	98	92
Vehicle Mile	.0172	75	72	66	69	68	68	72	71	72	84	93	89
Gross Ton Mile	$ .00238	78	79	69	73	72	71	75	74	74	83	93	88
Net Ton Mile	.00756	76	72	63	66	68	67	72	72	72	83	97	94
Equated Ton Mile	.00391	72	68	59	64	64	64	69	71	70	71	93	90
TRAFFIC	$ 63,238*												
Revenue Ratio	2.47%	64	54	49	54	55	55	60	63	63	75	90	88
Route Mile	$ 260.43	107	89	94	97	103	109	115	120	124	124	118	90
Schedule	11.86	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	2.33	67	57	52	56	57	58	64	66	67	77	91	88
Net Ton (revenue)	$ .0979	76	55	46	52	52	52	57	60	60	70	86	83
Schedule Hour	2.5910	61	43	39	46	49	51	58	64	67	81	95	90
Schedule Mile	.1617	73	59	54	60	62	64	71	75	76	88	98	90
Vehicle Mile	.0061	72	66	59	62	62	64	69	70	70	85	93	87
Gross Ton Mile	$ .00085	75	71	62	67	65	65	70	73	73	83	94	87
Net Ton Mile	.00268	66	60	52	57	57	57	62	64	65	76	90	84
Equated Ton Mile	.00139	68	61	53	58	59	60	65	69	69	71	93	87
GENERAL	$ 114,847*												
Revenue Ratio	4.49%	70	63	58	63	63	63	67	65	65	75	89	91
Route Mile	$ 472.97	116	104	111	113	118	124	128	124	128	125	117	94
Schedule	21.54	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	4.24	72	67	61	65	65	66	70	69	70	78	90	91
Net Ton (revenue)	$ .1777	82	64	54	60	60	59	64	62	62	70	85	86
Schedule Hour	4.7055	65	51	46	53	56	58	64	67	70	81	94	94
Schedule Mile	.2937	78	70	64	70	71	73	78	78	79	88	97	93
Vehicle Mile	.0111	84	84	69	72	71	71	74	72	73	85	92	94
Gross Ton Mile	$ .00154	80	83	72	77	75	74	77	75	75	83	93	89
Net Ton Mile	.00487	72	70	61	66	65	64	69	67	67	77	89	88
Equated Ton Mile	.00252	74	72	62	67	67	67	72	72	71	72	93	90
TAXES	$ 193,305*												
Revenue Ratio	7.55%	77	70	69	73	74	76	76	77	77	78	84	91
Route Mile	$ 796.08	129	117	131	131	139	151	144	148	151	130	111	93
Schedule	36.24	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle (loaded)	7.13	81	75	72	75	76	80	79	82	82	81	85	91
Net Ton (revenue)	$ .2991	91	72	65	70	70	72	72	74	73	73	81	86
Schedule Hour	7.9201	73	57	55	62	66	71	72	80	82	84	90	93
Schedule Mile	.4943	87	78	75	81	84	89	88	93	93	92	92	93
Vehicle Mile	.0187	86	84	82	84	83	86	85	86	86	88	88	90
Gross Ton Mile	$ .00259	89	93	86	90	89	90	87	89	89	86	88	89
Net Ton Mile	.00820	80	78	72	77	77	78	78	80	79	79	85	87
Equated Ton Mile	.00424	82	80	74	79	79	82	81	85	84	74	88	90

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* In thousands.

ø Includes Loss and Damage Freight for which Indices not shown.

Analysis 3.7 Chronological Indices of Rail Tonnage of Commodity Groups

RATING GROUP COMMODITY GROUP	BASE YEAR 1932 AGGREGATE (000)	12 YEAR AVERAGE	PERCENTAGE RELATIONSHIP TO 1932											
			1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933	1934ø
ALL GROUPS	630,989	172	156	198	184	192	207	198	198	206	177	138	108	123
I ROUGH MATERIAL	63,064	267	249	329	330	343	364	369	304	292	256	179	90	117
10 Sand, Stone, Gravel	46,641	244	221	287	293	312	337	347	273	259	239	179	78	100
11 Timber	10,920	367	371	508	486	476	480	464	434	433	331	178	141	183
12 Rough Vegetables	5,503	105/	-	-	-	-	-	-	96	97	113	101	121	123
19 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
II RAW MATERIAL	400,169	161	147	187	168	174	191	178	182	193	166	132	111	124
20 Grain	36,650	141	163	148	164	141	146	149	161	153	143	127	101	97
21 Animal Feeds	8,125	151	145	159	167	169	174	179	161	167	165	133	99	105
22 Fresh Vegetables	7,874	120	108	118	120	128	135	133	127	130	126	121	89	96
23 Live Animals	10,212	146	167	177	174	163	160	155	156	146	134	121	93	116
24 Dry Fuels	282,599	143	126	169	149	152	174	161	154	164	145	121	105	118
25 Crude Liquids	10,860	159	113	147	156	191	192	195	180	185	168	157	125	131
26 Ores	23,011	360	290	405	310	393	415	365	510	603	453	267	210	254
27 Lumber	12,817	293	344	423	385	388	365	339	342	327	223	157	117	115
28 Fertilizer	8,021	175/	-	-	-	-	-	-	222	232	227	157	113	137
29 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
III SEMIPROCESSED MATERIAL	23,629	224	250	299	273	302	299	253	237	238	183	134	121	140
30 Primary Metals	3,489	396	407	583	492	577	597	426	443	466	305	186	171	193
31 Fibres	6,242	175	199	211	216	226	223	213	169	169	150	112	112	125
32 Hides	631	140	161	164	153	155	152	158	136	138	130	123	110	114
33 Rubber	378	119/	-	-	-	-	-	-	120	148	120	122	104	126
34 Salt	2,576	121	126	132	128	132	126	126	130	124	115	110	106	107
35 Ice	1,464	241	352	346	303	338	284	278	268	226	176	154	72	71
36 Primary Paper	2,213	121/	-	-	-	-	-	-	119	131	130	107	104	131
37 Horticultural	367	115/	-	-	-	-	-	-	346	392	352	181	141	175
38 Scrap	6,269	252/	-	-	-	-	-	-	346	392	352	181	141	175
39 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IV NECESSARIES	33,854	118	112	116	119	121	122	124	128	129	125	115	104	114
40 Dry Vegetables	6,019	119	115	115	120	123	118	126	137	131	130	119	100	112
41 Edible Liquids	2,680	136	116	118	129	149	154	165	146	149	147	126	139	181
43 Edible Animal Products	6,000	115	106	122	122	117	120	119	118	121	115	112	104	110
43 Manufactured Foods	6,893	126	112	118	128	138	137	139	135	143	138	120	106	119
44 Processed Cereals	10,024	105	107	105	103	99	101	100	116	114	113	108	97	96
45 Furnishings	1,513	144/	-	-	-	-	-	-	169	183	151	138	126	126
46 Textiles and Leather	725	160	178	190	176	188	184	167	177	179	145	128	113	105
47 Clothing*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V AUXILIARIES	92,684	142	112	131	139	153	158	161	178	180	165	135	94	112
50 Masonry	20,488	218	202	234	241	261	265	265	287	272	226	166	93	107
51 Power	35,888	101	62	74	84	94	99	105	119	130	132	119	94	100
52 Lubricants	2,577	115	75	90	101	113	120	126	114	154	142	122	96	109
53 Kindlers*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54 Preservatives	3,353	121/	-	-	-	-	-	-	137	149	129	116	98	109
55 Chemicals, in tanks	1,444	151/	-	-	-	-	-	-	183	200	166	135	119	139
56 Chemicals, packaged	104	153	168	174	160	168	183	197	142	153	150	150	93	107
57 Cleansers and Adhesives	983	119/	-	-	-	-	-	-	128	136	130	121	103	110
58 Explosives	136	174/	-	-	-	-	-	-	244	236	204	154	106	143
59 Miscellaneous#	27,711	158/	-	-	-	-	-	-	205	216	177	137	112	130
VI ACCESSORIES	17,589	267	220	308	257	295	311	310	369	415	300	189	135	181
60 Ferrous Metals	12,263	250	200	272	222	259	273	281	363	405	296	188	139	185
61 Nonferrous Metals	106	449	579	711	654	723	748	387	336	417	319	265	146	259
62 Rubber	222	210/	-	-	-	-	-	-	332	334	225	142	127	185
63 Tools and Appliances	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64 Machinery and Parts	1,254	403	430	615	511	551	586	582	407	427	331	193	107	145
65 Vehicles and Parts	2,365	279	199	315	285	326	343	309	380	464	303	190	134	224
66 Stationery, Printing	1,227	133/	-	-	-	-	-	-	151	164	150	128	106	102
67 Personal	152	112/	-	-	-	-	-	-	132	109	112	104	114	118
68 Amusement*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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* Included in No. 59.

Includes all Miscellaneous Manufactures, I.C.C. Commodity Group 701.

ø Not included in 12-year average or 6-year average - fourth quarter 1934 estimated.

/ Six-year average.

Source - I.C.C. Commodity Statistics. New Classification adopted in 1928 distorts indices of some commodities for years prior to 1928.

Analysis 3.8 Chronological Indices of Rail Net Ton Miles of Commodity Groups - Carload Traffic Only

RATING GROUP COMMODITY GROUP	BASE YEAR 1932 AGGREGATE (000)	12 YEAR AVERAGE	PERCENTAGE RELATIONSHIP TO 1932 1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933	1934ø
ALL GROUPS	219,733,001	160	147	183	170	177	189	179	182	189	163	132	107	120
I ROUGH MATERIAL	5,784,067	285	271	361	358	367	385	386	327	317	270	179	99	128
10 Sand, Stone, Gravel	3,673,879	244	221	287	293	312	337	347	273	259	239	179	78	100
11 Timber	1,853,564	367	371	508	486	476	480	464	434	433	331	178	141	184
12 Rough Vegetables	256,624	105/	-	-	-	-	-	-	96	97	113	101	121	123
19 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
II RAW MATERIAL	140,477,447	157	147	185	168	172	187	173	176	184	158	129	107	118
20 Grain	11,080,502	141	163	148	164	141	146	149	161	153	143	127	101	97
21 Animal Feeds	3,396,403	151	145	159	167	169	174	179	161	167	165	133	99	105
22 Fresh Vegetables	13,519,184	120	108	118	120	128	135	133	127	130	126	121	89	96
23 Live Animals	4,575,044	145	167	177	174	163	160	155	156	146	134	121	93	116
24 Dry Fuels	89,773,322	143	126	169	149	152	174	161	154	164	145	121	105	118
25 Crude Liquids	3,407,447	159	113	147	156	191	192	195	180	185	168	157	125	131
26 Ores	4,392,961	360	290	405	310	393	415	365	510	603	453	267	210	254
27 Lumber	8,523,532	290	344	423	385	388	365	304	342	327	223	157	117	115
28 Fertilizer	1,809,053	175/	-	-	-	-	-	-	222	232	227	157	113	137
29 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
III SEMIPROCESSED MATERIAL	7,934,178	210	229	274	255	279	280	238	219	223	175	129	123	135
30 Primary Metals	1,178,420	396	407	583	492	577	597	426	443	466	305	186	171	193
31 Fibres	2,627,832	175	199	211	216	226	223	213	169	169	150	112	112	125
32 Hides	374,114	140	161	164	153	155	152	158	136	138	130	123	110	114
33 Rubber	208,444	119/	-	-	-	-	-	-	120	148	120	122	104	126
34 Salt	1,145,663	121	126	132	128	132	126	126	130	124	115	110	106	107
35 Ice	73,761	241	352	346	303	337	284	278	268	226	176	154	72	71
36 Primary Paper	1,210,322	121/	-	-	-	-	-	-	134	136	134	119	102	100
37 Horticultural	156,805	115/	-	-	-	-	-	-	119	131	130	107	104	131
38 Scrap	958,818	252/	-	-	-	-	-	-	346	392	352	181	141	175
39 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IV NECESSARIES	23,087,553	121	111	116	119	121	121	124	128	129	125	115	140	114
40 Dry Vegetables	4,603,101	119	115	115	120	123	118	126	137	131	130	119	100	112
41 Edible Liquids	1,592,405	136	116	118	129	149	154	165	146	149	147	126	139	181
42 Edible Animal Products	5,613,820	115	106	122	122	117	120	119	118	121	115	112	104	110
43 Manufactured Foods	4,193,197	126	112	118	128	138	137	139	135	143	138	120	106	119
44 Processed Cereals	5,720,481	105	107	105	103	99	101	100	116	114	113	108	97	96
45 Furnishings	928,235	144/	-	-	-	-	-	-	169	183	150	138	125	126
46 Textiles and Leather	436,314	160	178	190	176	188	184	167	177	179	145	128	113	105
47 Clothing*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V AUXILIARIES	34,735,229	136	104	122	130	143	148	152	169	172	160	133	94	109
50 Masonry	5,640,843	218	202	234	241	261	265	265	287	272	226	166	93	107
51 Power	12,591,847	101	62	74	84	94	99	105	119	130	132	119	94	100
52 Lubricants	1,255,364	115	75	90	101	113	120	126	144	154	141	122	96	109
53 Kindlers*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54 Preservatives	1,197,390	122/	-	-	-	-	-	-	137	149	129	116	98	109
55 Chemicals, in tanks	317,780	151/	-	-	-	-	-	-	183	200	166	135	119	139
56 Chemicals, packaged	47,722	153	168	174	160	168	181	197	142	153	150	150	93	107
57 Cleansers and Adhesives	482,635	120/	-	-	-	-	-	-	128	136	130	121	103	110
58 Explosives	65,414	174/	-	-	-	-	-	-	244	236	204	154	106	143
59 Miscellaneous#	13,136,232	158/	-	-	-	-	-	-	205	216	177	137	112	130
VI ACCESSORIES	7,714,527	275	227	322	271	310	327	322	372	422	302	189	134	190
60 Ferrous Metals	4,268,433	250	200	272	222	259	273	281	363	405	296	188	139	185
61 Nonferrous Metals	28,764	449	579	711	654	723	747	387	336	417	319	265	146	259
62 Rubber	202,152	210/	-	-	-	-	-	-	332	334	225	142	127	185
63 Tools and Appliances	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64 Machinery and Parts	736,615	403	430	615	511	551	586	582	407	427	331	193	107	145
65 Vehicles and Parts	1,650,573	279	199	314	285	326	343	309	380	463	303	190	134	224
66 Stationery, Printing	636,797	133/	-	-	-	-	-	-	151	164	150	128	106	102
67 Personal	191,193	112/	-	-	-	-	-	-	132	109	112	104	114	118
68 Amusement*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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* Included in No. 59.

# Includes all Miscellaneous Manufactures, I.C.C. Commodity Groups 701.

ø Not included in 12-year average or 6-year average - fourth quarter 1934 estimated.

/ Six-year average.

Source - I.C.C. Commodity Statistics. New classification adopted in 1928 distorts indices of some commodities for years prior to 1928.

Analysis 3.9 Chronological Indices of Pipe Traffic Operations and Income

	BASE YEAR 1932 AGGREGATE	12 YEAR AVERAGE	PERCENTAGE RELATIONSHIP TO 1932 1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933
AGGREGATE STATISTICS													
Companies Reporting*	46	39	36	35	36	37	34	33	33	37	40	51	49
Miles Operated	92,782	85	62	70	73	75	79	82	88	92	96	100	100
Gross Investment	$763,941,669	82	50	57	65	67	71	80	86	97	101	110	100
Net Investment#	$428,074,456	91	47	60	68	74	75	86	90	103	104	115	92
Tons Originated	82,827,629	85	58	59	68	74	75	88	94	103	105	101	101
REVENUES													
Gathering Lines	$ 57,378,601	99	73	78	85	92	95	110	116	126	122	106	87
Trunk Lines	$154,410,046	87	56	56	64	73	77	85	101	116	110	105	97
COST													
Gathering Lines - Total	$ 27,992,151	116	104	105	110	122	121	130	133	131	126	115	100
Maintenance - Total	$ 11,580,056	126	108	112	124	135	135	140	150	139	136	137	95
Repairs	2,889,490	139	135	133	142	149	148	164	162	161	151	125	101
Depreciation	7,090,655	105	84	89	98	111	111	117	121	112	114	123	84
Retirements	1,599,911	192	163	169	205	213	220	195	259	218	206	219	133
Transportation	$ 9,198,215	118	104	106	109	116	122	144	139	146	129	115	90
Administration	$ 2,808,528	93	94	85	103	89	92	87	94	94	90	94	95
Taxes	$ 4,405,352	102	102	96	81	122	100	101	102	99	116	68	141
Trunk Lines - Total	$ 73,972,791	89	63	70	72	68	83	90	99	107	109	99	108
Maintenance - Total	$ 36,775,063	91	61	69	77	66	88	96	103	110	111	108	101
Repairs	5,448,616	121	108	116	109	97	123	142	151	155	140	118	93
Depreciation	30,396,224	79	48	55	67	57	75	75	89	87	102	102	97
Retirements	930,223	269	161	249	202	186	286	494	241	576	216	245	272
Transportation	$ 18,702,654	98	74	78	81	78	90	97	116	130	122	113	101
Administration	$ 6,848,658	71	51	58	56	53	64	69	73	79	76	81	95
Taxes	$ 11,646,416	79	62	64	53	68	69	70	76	82	100	59	152
NET OPERATION INCOME	$109,823,705	75	47	46	57	73	71	83	101	123	113	107	83
Gathering Lines	29,386,450	74	42	52	61	62	70	92	100	123	118	97	74
Trunk Lines	80,437,255	76	49	44	56	76	71	80	102	124	112	111	86
RETURN ON GROSS INVESTMENT (PERCENTAGES)	14	15	14	12	13	16	14	15	17	18	16	14	12

*** Actual - not ratio.**

\# Less depreciation.

SECTION 3. TYPICALITY OF 1932 STATISTICS

Analysis 3.10 Chronological Indices of Crude Petroleum Production (Tons)

REGIONS AND STATES	BASE YEAR 1932 AGGREGATE	PERCENTAGE RELATIONSHIP TO 1932											
		12 YEAR AVERAGE	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1933
UNITED STATES - TOTAL	122,013,827	104	71	93	91	97	98	115	115	128	114	108	114
North Atlantic - Total	2,473,971	78	53	56	56	62	69	74	79	95	103	96	99
New York	545,144	69	29	36	41	48	56	64	74	96	104	96	90
Pennsylvania	1,928,827	81	60	61	60	65	72	77	80	95	103	96	102
Great Lakes - Total	2,646,931	97	101	99	93	93	94	93	89	109	101	88	100
Ohio	721,678	139	146	153	147	155	157	164	151	145	140	115	92
Michigan	1,073,815	34	-	-	-	-	1	6	9	66	57	55	114
Indiana	125,253	113	135	129	116	103	100	106	131	122	123	104	90
Illinois	726,185	145	201	186	172	168	166	150	138	135	123	108	90
Southeast - Total	1,580,109	123	157	142	131	123	121	126	128	131	123	108	83
West Virginia	602,331	141	181	164	153	149	153	155	146	144	131	115	98
Kentucky	977,001	111	143	128	118	108	100	107	117	124	118	103	73
Tennessee	777	420	200	160	200	480	860	1200	920	380	420	120	-
Northwest - Total	8,058,896	128	118	146	138	140	150	135	129	132	124	108	108
Kansas	5,415,384	107	91	81	83	110	119	118	111	123	119	106	120
Colorado	176,535	131	9	8	39	108	244	249	244	208	146	136	83
Montana	381,818	148	100	113	115	167	314	206	163	162	136	115	86
Wyoming	2,085,159	177	199	334	294	217	192	159	160	144	133	111	83
Southwest - Total	79,570,316	96	62	69	73	82	84	109	110	117	109	110	123
Arkansas	1,872,727	267	105	304	382	642	484	332	266	207	163	123	96
Oklahoma	23,814,141	128	98	105	113	115	117	181	163	166	141	118	118
Texas	48,559,128	75	38	42	43	46	53	70	82	95	93	106	127
Louisiana	3,388,811	108	162	114	97	93	106	105	100	94	107	100	113
New Mexico	1,935,509	39	-	-	8	9	13	10	8	15	82	122	113
Pacific Coast - Total	27,681,118	122	78	148	129	131	126	130	94	164	128	106	97
California	27,681,118	122	78	148	129	131	126	130	94	164	128	106	97
Unassigned	-2,486	59	81	113	81	75	50	44	37	44	44	44	-

SECTION 4. INCOME

Analysis 4.1 Reporting Carriers Freight Service Income - 1932

	RAIL (000)	WATER			PIPE (000)
		CARLOT	CARGO		
		COMMON (000)	CONTRACT (000)	PRIVATE (000)	
NUMBER OF REPORTING CARRIERS*	160	103	36	29	45
REVENUES					
Freight - Total	$ 2,442,881	$ 102,407	$ 12,466	$ 4,708	$211,789
Rough Material	62,354	-	-	-	-
Raw Material	1,202,727	-	-	-	199,756
Semiprocessed Material	110,376	-	-	-	-
Necessaries	291,454	-	-	-	-
Auxiliaries	481,104	-	-	-	12,033
Accessories	129,282	-	-	-	-
L.C.L.	252,427	-	-	-	-
Adjustment	86,843	-	-	-	-
Switching	66,501	-	-	-	-
Other	49,999	-	-	-	-
Total Revenues	$ 2,559,380	$ 102,407	$ 12,466	$ 4,708	$211,789
EXPENSES					
Maintenance	$ 785,184	$ 18,524	$ 2,108	$ 1,544	$ 48,355
Roadway	228,146	1,878	80	34	29,336
Power - Total	204,532	-	-	-	15,004
Structures	12,175	-	-	-	15,004
Locomotives	192,357	-	-	-	-
Cars - Total	338,750	14,507	2,018	1,495	-
Owned	252,048	-	-	-	-
Hired	86,702	-	-	-	-
Station	9,334	2,139	9	15	4,015
Wharves & Docks	4,422	-	-	-	-
Transportation	$ 809,406	$ 63,852	$ 9,458	$ 5,699	$ 27,901
Train - Total	342,712	45,930	8,101	5,338	17,249
Movement	339,881	40,107	7,283	4,831	-
Supplies	2,831	5,823	818	507	-
Assemblage - Total	299,497	3,914	79	54	9,077
Movement	270,513	3,914	79	54	-
Supplies	28,984	-	-	-	-
Floatage	12,026	1,224	290	0	-
Station Agency	155,171	12,783	989	306	1,575
Other Operations	$ 5,889	-	-	-	-
Water Operations	3,051	-	-	-	-
Miscellaneous	2,838	-	-	-	-
Overhead	$ 389,849	$ 27,164	$ 2,347	$ 773	$ 25,709
Administration - Total	178,085	26,220	2,235	706	9,657
Traffic	63,238	11,619	383	119	-
General	114,847	14,601	1,852	587	-
Loss and Damage Freight	18,459	-	-	-	-
Taxes	193,305	944	111	67	16,052
TOTAL EXPENSES	$ 1,990,328	$ 109,540	$ 13,914	$ 8,015	$101,965
NET RESULTS	$ P 569,052	$ D 7,133	$ D 1,448	$ D 3,307	P$109,824

* Actual figures (not thousands)

P Profit. D. Deficit

Sources: Railway Revenues, Overhead Expenses and Other Operations Expenses from I.C.C. Reports of Class I Railways and Switching Companies; Maintenance and Transportation Expenses from returns to Coordinator's Rail Carrier Inquiry.
Waterway Revenues and Expenses from returns to Coordinator's inquiry.
Pipe line Revenues and Expenses from I.C.C. Reports.

Analysis 4.2 Rail Carrier Freight Service Income - 1932

	UNITED STATES (000)	EASTERN DISTRICT (000)	SOUTHERN DISTRICT (000)	WESTERN DISTRICT (000)
REVENUE	$2,559,380	$1,122,400	$ 487,363	$ 949,617
Freight - Total	2,442,881	1,053,331	473,963	915,587
I Rough	62,354	18,641	13,364	30,349
II Raw	1,202,727	500,252	279,921	422,554
III Semiprocessed	110,376	46,801	19,897	43,678
IV Necessaries	291,454	127,519	42,032	121,904
V Auxiliaries	481,104	215,315	68,832	196,957
VI Acessories	129,282	75,852	13,740	39,690
L C L	252,427	108,342	53,379	90,706
Adjustment (Debit)	86,843	39,391	17,208	30,249
Switching	66,501	44,131	6,082	16,287
Other	49,998	24,938	7,318	17,742
EXPENSES *				
Station - Total	$ 164,505	$ 83,387	$ 24,861	$ 56,257
Maintenance	9,334	4,410	1,521	3,403
Transportation	155,171	78,977	23,340	52,854
Yard - Total	724,929	397,766	101,321	225,842
Maintenance of Way and Struct. - Total	48,986	24,834	7,569	16,583
Roadway	40,335	20,387	6,102	13,846
Power Structure	4,229	2,278	670	1,261
Wharves and docks	4,422	2,170	777	1,475
Maintenance of Equipment - Total	364,420	191,278	50,296	122,846
Power	54,201	33,719	7,218	13,265
Vehicle	310,219	157,559	43,078	109,581
Home	232,323	113,770	39,740	78,813
Foreign	77,896	43,790	3,338	30,768
Transportation - Total	311,523	181,653	43,456	86,413
Supplies	28,984	15,967	3,763	9,254
Switching	270,513	154,819	39,076	76,617
Floatage	12,026	10,867	617	542
Road - Total	705,156	311,600	121,404	272,151
Maintenance of Way and Struct. - Total	195,757	80,867	37,556	77,334
Roadway	187,811	77,476	36,202	74,133
Power Structures	7,946	3,391	1,353	3,202
Maintenance of Equipment - Total	166,687	76,223	28,828	61,636
Power	138,156	63,345	24,854	49,957
Vehicle	28,531	12,877	3,974	11,679
Home	19,725	9,008	3,229	7,488
Foreign	8,806	3,869	746	4,191
Transportation - Total	342,712	154,511	55,021	133,181
Supplies	2,831	1,265	465	1,100
Movement	339,881	153,246	54,555	132,080
Office - Total	178,085	87,997	28,758	61,330
Traffic	63,238	31,248	10,212	21,778
Directive	114,847	56,749	18,546	39,551
Taxes	193,305	95,518	31,216	66,571
Total	$1,965,979	$ 976,268	$ 307,560	$ 682,151
NET RESULTS	$ 593,401	$ 146,131	$ 179,803	$ 267,466
OPERATING RATIO	77%	87%	63%	72%

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* Does not include Water Operations, Miscellaneous Operations and Loss and Damage Freight.

Analysis 4.3 Rail Carrier Freight Service Income Eastern and Southern Districts - 1932 *

	NEW ENGLAND (000)	TRUNK LINE (000)	CENTRAL (000)	POCA-HONTAS (000)	SOUTH-EASTERN (000)
STATISTICS					
Route Miles	8	22	38	8	35
Loaded Cars Handled - Road	5,691	27,943	24,951	6,625	11,717
Loaded Cars Handled - Yard	6,907	38,946	43,691	10,344	18,146
Terminal Cars	2,907	12,505	12,996	3,434	6,504
Equated Cars	1,832	6,103	6,846	1,680	2,947
Loaded Car Miles	346	1,881	2,459	558	1,151
Train Miles	12,376	59,028	86,166	17,023	53,721
Net Ton Miles (Revenue)	6,034	48,246	59,148	21,300	26,018
Gross Ton Miles	21,359	139,836	181,828	49,990	81,750
Vehicle Ton Miles	18,250	122,280	159,382	44,555	70,383
Yard Locomotive Hours	1,137	8,865	10,072	1,412	3,762
EXPENSES					
Station - Total	$ 8,867	$ 37,507	$ 37,012	$ 5,893	$ 18,968
Maintenance	511	2,083	1,816	328	1,192
Transportation	8,357	35,424	35,197	5,565	17,775
Yard - Total	27,050	177,312	193,404	31,123	70,198
Maintenance of Way and Struct. - Total	2,404	9,661	12,768	2,343	5,226
Roadway	2,139	7,326	10,921	1,572	4,529
Power Structure	148	888	1,241	279	411
Wharves and Docks	117	1,447	606	491	286
Maintenance of Equipment - Total	12,740	82,043	96,495	15,098	35,197
Power	2,016	16,861	14,841	2,485	4,733
Vehicle	10,723	65,182	81,654	12,614	30,465
Home	6,635	48,535	58,599	13,020	26,721
Foreign	4,088	16,647	23,055 Cr.	406	3,744
Transportation - Total	11,905	85,608	84,140	13,682	29,774
Supplies	905	6,859	8,203	1,436	2,327
Switching	10,990	69,244	74,585	11,755	27,322
Floatage	9	9,505	1,353	491	126
Road - Total	28,727	134,833	148,041	37,891	83,513
Maintenance of Way and Struct. - Total	8,687	31,311	40,868	11,498	26,058
Roadway	8,376	29,916	39,184	10,888	25,315
Power Structures	312	1,395	1,684	610	743
Maintenance of Equipment - Total	5,803	34,347	36,073	9,766	19,061
Power	5,010	29,658	28,677	8,460	16,393
Vehicle	792	4,688	7,396	1,306	2,668
Home	486	3,452	5,070	1,195	2,033
Foreign	306	1,236	2,326	111	635
Transportation - Total	14,237	69,175	71,099	16,626	38,394
Supplies	68	450	747	146	319
Movement	14,169	68,725	70,351	16,480	38,075
Office - Total	7,116	39,183	41,699	8,882	19,877
Traffic	2,527	13,914	14,807	3,154	7,058
Directive	4,589	25,269	26,892	5,728	12,818
Taxes	7,724	42,532	45,263	9,641	21,575
Total	79,483	431,367	465,419	93,429	214,131

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* Expenses do not include Water Operations, Miscellaneous Operations and Loss and Damage Freight. Revenues not available by territories.

Analysis 4.4 Rail Carrier Freight Service Income
Western District - 1932 *

	WESTERN TRUNK LINE (000)	SOUTH-WESTERN (000)	PACIFIC NORTH WEST (000)	PACIFIC SOUTH-WEST (000)
STATISTICS				
Route Miles	59	36	20	18
Loaded Cars Handled - Road	19,825	9,178	2,654	3,159
Loaded Cars Handled - Yard	26,141	13,175	3,968	6,594
Terminal Cars	8,296	4,391	1,573	2,147
Equated Cars	4,784	2,101	726	1,052
Loaded Car Miles	1,808	903	520	698
Train Miles	77,458	41,247	19,374	24,659
Net Ton Miles (Revenue)	35,080	17,746	10,328	11,737
Gross Ton Miles	125,502	64,167	37,313	45,027
Vehicle Ton Miles	108,130	55,307	31,763	38,343
Yard Locomotive Hours	6,025	2,270	1,146	1,453
EXPENSES				
Station - Total	$ 28,229	$ 13,915	$ 5,505	$ 8,608
Maintenance	1,684	719	266	734
Transportation	26,545	13,195	5,239	7,874
Yard - Total	121,636	47,513	23,299	33,394
Maintenance of Way and Struct. - Total	9,699	3,196	2,063	1,625
Roadway	7,588	2,929	1,892	1,437
Power Structure	785	209	147	120
Wharves and Docks	1,325	58	24	68
Maintenance of Equipment - Total	64,309	27,351	12,540	18,646
Power	7,507	2,823	1,166	1,769
Vehicle	56,802	24,528	11,374	16,877
Home	42,674	15,809	8,423	11,906
Foreign	14,128	8,718	2,951	4,971
Transportation - Total	47,628	16,967	8,696	13,122
Supplies	5,231	1,372	1,231	1,419
Switching	42,350	15,498	7,414	11,355
Floatage	47	97	50	348
Road - Total	120,937	63,582	38,729	48,905
Maintenance of Way and Struct. - Total	34,574	19,682	11,089	11,990
Roadway	33,007	19,009	10,624	11,492
Power Structures	1,567	673	465	498
Maintenance of Equipment - Total	26,835	14,274	8,866	11,661
Power	21,723	11,420	7,441	9,373
Vehicle	5,112	2,853	1,425	2,289
Home	3,238	1,813	849	1,588
Foreign	1,874	1,040	576	701
Transportation - Total	59,527	29,626	18,774	25,254
Supplies	453	145	168	335
Movement	59,075	29,481	18,606	24,919
Office - Total	30,093	13,612	7,559	10,066
Traffic	10,686	4,833	2,684	3,575
Directive	19,407	8,778	4,875	6,492
Taxes	32,664	14,775	8,205	10,927
Total	333,559	153,396	83,297	111,899

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* Expenses do not include Water Operations, Miscellaneous Operations and Loss and Damage Freight. Revenues not available by Territories.

Analysis 4.5 Water Carlot Carrier Freight Service Income - 1932 *

	UNITED STATES (000)	ATLANTIC COAST (000)	ATLANTIC GULF (000)	INTER COASTAL (000)	INLAND WATERS (000)	GREAT LAKES (000)	PACIFIC COAST (000)
REVENUES							
Freight - Total	$102,407	$ 24,767	$ 13,299	$ 38,946	$ 8,571	$ 7,404	$ 9,420
EXPENSES #							
Station	$ 14,920	$ 4,069	$ 2,057	$ 4,730	$ 1,969	$ 897	$ 1,198
Maintenance	2,138	871	375	493	284	67	48
Transportation	12,781	3,198	1,683	4,237	1,685	829	1,149
Yard	$14,543	$3,995	$2,483	$4,155	$1,437	$1,100	$1,373
Maintenance of Way	1,878	284	848	327	185	99	135
Power Structure	-	-	-	-	-	-	-
Wharves and Docks	-	-	-	-	-	-	-
Maintenance of Equipment	7,526	1,567	861	2,745	742	758	853
Transportation	5,139	2,144	774	1,083	509	244	385
Supplies	-	-	-	-	-	-	-
Switching	3,915	1,414	438	1,007	494	244	318
Floatage	1,224	730	336	76	15	-	67
Road	$ 52,912	$ 10,874	$ 8,314	$ 20,969	$ 3,359	$ 3,743	$ 5,653
Maintenance of Way	-	-	-	-	-	-	-
Maintenance of Equipment	6,981	1,745	2,057	1,397	856	453	473
Power	-	-	-	-	-	-	-
Vehicle	-	-	-	-	-	-	-
Transportation	45,930	9,129	6,257	19,572	2,503	3,290	5,179
Supplies	5,822	1,029	969	2,307	274	465	778
Movement	40,108	8,100	5,288	17,264	2,229	2,826	4,401
Office	$27,163	$ 4,439	$ 2,319	$ 12,403	$ 1,377	$ 2,591	$ 4,034
Traffic	11,618	1,995	1,551	4,891	446	889	1,846
Directive	14,602	1,855	690	7,492	885	156	2,119
Taxes	$ 944	$ 589	$ 78	$ 20	$ 47	$ 141	$ 69
Total	$109,540	$23,378	$15,174	$42,257	$8,142	$8,331	$12,258
NET RESULTS	$ L 7,133	$ P 1,389	$ L 1,874	$ L 3,310	$ P 428	$ L 927	$ L 2,838

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* Includes 4 out of 5 companies.

# Where both freight and passenger services were provided jointly, costs were prorated to each service on the basis of revenues derived.

Analysis 4.6 Water Cargo Carrier Freight Service Income - 1932

	UNITED STATES (000)	ATLANTIC COAST (000)	ATLANTIC GULF (000)	INTER COASTAL (000)	INLAND WATERS (000)	GREAT LAKES (000)	PACIFIC COAST (000)
REVENUES							
Freight - Total	$ 17,174	$ 3,278	$ 1,227	$ 183	$ 1,010	$ 11,099	$ 377
EXPENSES #							
Station	$ 1,319	$ 48	$ -	$ 70	$ 8	$ 1,096	$ 97
Maintenance	25	2	-	14	-	9	-
Transportation	1,296	47	-	57	8	1,087	97
Yard	$ 2,916	$ 845	$ 177	$ 71	$ 65	$ 1,719	$ 39
Maintenance of Way	115	69	-	23	2	21	-
Power Structure	-	-	-	-	-	-	-
Wharves and Docks	-	-	-	-	-	-	-
Maintenance of Equipment	2,380	472	171	43	50	1,605	39
Transportation	423	304	6	6	14	93	-
Supplies	-	-	-	-	-	-	-
Switching	133	16	6	6	14	91	0
Floatage	290	288	-	-	0	2	-
Road	$ 14,573	$ 2,908	$ 815	$ 143	$ 314	$ 9,858	$ 535
Maintenance of Way	-	-	-	-	-	-	-
Maintenance of Equipment	1,132	399	52	8	19	634	20
Power	-	-	-	-	-	-	-
Vehicle	-	-	-	-	-	-	-
Transportation	13,439	2,509	762	135	295	9,223	515
Supplies	1,325	253	54	16	47	872	83
Movement	12,113	2,256	708	118	248	8,351	432
Office	$ 3,121	$ 495	$ 3	$ 33	$ 86	$ 2,408	$ 96
Traffic	502	53	3	10	32	396	8
Directive	2,439	399	-	23	28	1,904	85
Taxes	$ 179	$ 42	$ -	$ -	$ 26	$ 108	$ 3
Total	$ 21,928	$ 4,296	$ 994	$ 318	$ 472	$ 15,081	$ 767
NET RESULTS	$ L 4,754	$ L 1,018	$ P 233	$ L 135	$ P 537	$ L3,982	$ L 389

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* Includes 4 out of 5 companies.

# Where both freight and passenger services were provided jointly, costs were prorated to each service on the basis of revenues derived.

Analysis 4.7 Pipe Carrier Freight Service Income - Year 1932

	UNITED STATES (000)	NORTH ATLANTIC COAST (000)	GREAT LAKES SOUTHWEST (000)	SOUTHWEST GULF (000)
REVENUES				
Freight - Total	$ 211,789	$ 9,294	$ 100,144	$ 102,351
Raw Material	199,756	6,489	91,649	101,618
Auxiliaries	12,033	2,805	8,494	733
Total	$ 211,789	$ 9,294	$ 100,144	$ 102,351
EXPENSES				
Maintenance - Total	$ 48,355	$ 2,647	$ 22,170	$ 23,538
Roadway	29,336	2,133	14,108	13,095
Power	15,004	406	6,537	8,061
Station	4,015	107	1,525	2,382
Transportation - Total	$ 27,901	$ 2,552	$ 12,698	$ 12,651
Movement	17,219	1,334	8,369	7,546
Assemblage	9,077	1,070	3,606	4,402
Station Agency	1,575	148	723	703
OVERHEAD - TOTAL	$ 25,709	$ 1,558	$ 13,617	$ 10,534
Administration	9,657	855	4,178	4,624
Taxes	16,052	704	9,439	5,909
GRAND TOTAL	$ 101,965	$ 6,757	$ 48,485	$ 46,723
NET RESULTS, PROFIT	$ 109,824	$ 2,537	$ 51,658	$ 55,628

Source: Carrier reports to Interstate Commerce Commission

SECTION 6. AGGREGATE VOLUME

Analysis 6.1 Tonnage of American Products and Imports - Revised Classification*

YEAR COMMODITY GROUPS	1928			1932		
	TOTAL (000)	PRODUCTION (000)	IMPORTS (000)	TOTAL (000)	PRODUCTION (000)	IMPORTS (000)
ALL MATERIAL	2,333,698	2,279,741	53,956	1,571,754	1,537,472	34,282
I ROUGH MATERIAL	364,199	360,956	3,243	233,242	231,643	1,598
10 Sand, Stone, Gravel	306,092	306,092	-	175,852	175,852	-
11 Timber	47,397	44,383	3,014	44,691	43,376	1,314
12 Rough Vegetables	10,709	10,480	229	12,699	12,415	284
19 Miscellaneous	-	-	-	-	-	-
II RAW MATERIAL	1,430,989	1,401,944	29,044	952,227	937,932	14,294
20 Grain	148,677	147,097	1,580	139,891	138,943	948
21 Animal Feeds	14,237	13,806	431	13,389	13,263	126
22 Fresh Vegetables	19,254	17,529	1,725	17,698	16,383	1,315
23 Live Animals	18,027	17,782	245	14,584	14,535	29
24 Dry Fuels	718,137	716,512	1,625	480,901	479,737	1,163
25 Crude Liquids	226,012	213,462	12,550	179,582	172,622	6,959
26 Ores	213,073	206,923	6,149	74,451	72,262	2,188
27 Lumber	45,367	43,470	1,897	16,991	16,440	551
28 Fertilizer	28,198	25,359	2,839	14,736	13,743	993
29 Miscellaneous	-	-	-	-	-	-
III SEMIPROCESSED MATERIAL	120,521	115,665	4,856	79,803	76,454	3,348
30 Primary Metals	46,125	45,333	791	11,332	11,038	294
31 Fibres	12,582	11,722	859	10,934	10,437	497
32 Hides	573	317	255	414	317	96
33 Rubber	677	173	503	578	108	470
34 Salt	7,966	7,924	42	6,378	6,344	33
35 Ice	42,877	42,877	-	43,268	43,268	-
36 Primary Paper	6,292	4,115	2,176	4,984	3,185	1,799
37 Horticultural	70	13	57	46	18	27
38 Scrap	3,356	3,187	169	1,864	1,735	128
39 Miscellaneous	-	-	-	-	-	-
IV NECESSARIES	109,479	98,282	11,196	103,621	95,186	8,434
40 Dry Vegetables	22,786	22,228	557	19,183	18,957	226
41 Edible Liquids	4,733	2,626	2,106	3,959	2,458	1,501
42 Edible Animal Products	52,264	51,895	369	53,856	53,707	149
43 Manufactured Foods	12,439	5,154	7,284	11,139	5,097	6,042
44 Processed Cereals	12,906	12,905	1	12,364	12,364	-
45 Furnishings	792	494	297	486	313	173
46 Textiles and Leather	2,792	2,248	543	1,983	1,669	314
47 Clothing	763	727	35	647	618	28
49 Miscellaneous	-	-	-	-	-	-
V AUXILIARIES	224,795	219,960	4,834	164,858	158,654	6,204
50 Masonry	84,128	83,545	583	39,288	39,160	127
51 Power	102,226	100,605	1,621	97,718	93,529	4,189
52 Lubricants	5,050	5,050	-	2,442	2,442	-
53 Kindlers	25	-	25	13	-	13
54 Preservatives	12,888	12,697	191	8,531	8,467	63
55 Chemicals, in tanks	1,453	1,440	13	855	854	1
56 Chemicals, packaged	13,093	12,947	145	11,030	10,887	143
57 Cleansers and Adhesives	3,504	3,464	39	3,206	3,193	12
58 Explosives	209	207	2	118	116	1
59 Miscellaneous	2,214	2	2,212	1,653	1	1,652
VI ACCESSORIES	83,713	82,932	780	38,002	37,600	401
60 Ferrous Metal	54,554	53,990	564	23,408	23,170	237
61 Nonferrous Metals	6,356	6,313	42	3,334	3,249	84
62 Rubber	1,671	1,670	1	1,191	1,191	1
63 Tools and Appliances	963	865	98	563	538	24
64 Machinery and Parts	4,744	4,740	3	2,628	2,628	-
65 Vehicles and Parts	9,576	9,574	1	2,882	2,882	1
66 Stationery, Printing	5,133	5,131	2	3,373	3,372	1
67 Personal	546	480	66	485	434	51
68 Amusement	165	165	-	134	132	1
69 Miscellaneous	-	-	-	-	-	-

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*Certain tonnages included in Groups 20,21,26,37,43,46,47,50,59,61 of Analysis 6.2 are here allocated to proper cognate groups.

SECTION 6. AGGREGATE VOLUME

Analysis 6.2 Tonnage of American Product and Imports - Reconciled with I.C.C. Commodity Classification

YEAR COMMODITY GROUPS	1928			1932		
	TOTAL (000)	PRODUCTION (000)	IMPORTS (000)	TOTAL (000)	PRODUCTION (000)	IMPORTS (000)
ALL MATERIAL	2,333,698	2,279,741	53,956	1,571,754	1,537,472	34,282
I ROUGH MATERIAL	360,590	357,576	3,014	229,613	228,298	1,314
10 Sand, Stone, Gravel	306,092	306,092	-	175,852	175,852	-
11 Timber	47,397	44,383	3,014	44,691	43,376	1,314
12 Rough Vegetables	7,101	7,101	-	9,070	9,070	-
19 Miscellaneous*	-	-	-	-	-	-
II RAW MATERIAL	1,432,136	1,400,848	31,288	953,682	937,527	16,155
20 Grain	152,286	150,477	1,809	143,520	142,288	1,232
21 Animal Feeds	14,237	13,806	431	13,389	13,263	126
22 Fresh Vegetables	19,254	17,529	1,725	17,698	16,383	1,315
23 Live Animals	18,027	17,782	245	14,584	14,535	49
24 Dry Fuels	718,137	716,512	1,625	480,901	479,737	1,163
25 Crude Liquids	226,012	213,462	12,550	179,582	172,622	6,959
26 Ores	213,188	206,959	6,229	74,474	72,272	2,202
27 Lumber	42,791	38,959	3,831	14,795	12,680	2,114
28 Fertilizer	28,198	25,359	2,839	14,736	13,743	993
29 Miscellaneous*	-	-	-	-	-	-
III SEMIPROCESSED MATERIAL	119,307	114,184	5,122	79,122	75,686	3,436
30 Primary Metals	45,335	44,552	782	11,043	10,750	293
31 Fibres	12,300	11,441	859	10,739	10,242	497
32 Hides	573	317	255	414	317	96
33 Rubber	503	-	503	470	-	470
34 Salt	7,966	7,924	42	6,378	6,344	33
35 Ice	42,877	42,877	-	43,268	43,268	-
36 Primary Paper	6,292	4,115	2,176	4,984	3,185	1,799
37 Horticultural	113	-	113	72	-	72
38 Scrap	3,344	2,955	389	1,750	1,578	172
39 Miscellaneous*	-	-	-	-	-	-
IV NECESSARIES	106,074	95,120	10,954	101,070	92,771	8,299
40 Dry Vegetables	22,786	22,228	557	19,183	18,957	226
41 Edible Liquids	4,652	2,545	2,106	3,888	2,387	1,501
42 Edible Animal Products	49,940	49,569	370	51,834	51,684	150
43 Manufactured Foods	13,492	6,205	7,286	12,207	6,165	6,041
44 Processed Cereals	12,909	12,905	4	12,367	12,364	2
45 Furnishings	17	-	17	12	-	12
46 Textiles and Leather	2,231	1,665	566	1,538	1,212	326
47 Clothing*	44	-	44	37	-	37
49 Miscellaneous*	-	-	-	-	-	-
V AUXILIARIES	242,635	239,691	2,943	176,233	171,499	4,734
50 Masonry	83,738	83,189	548	38,946	38,821	124
51 Power	65,744	64,122	1,621	62,076	57,887	4,189
52 Lubricants	5,050	5,050	-	2,442	2,442	-
53 Kindlers*	-	-	-	-	-	-
54 Preservatives	11,619	11,427	191	7,650	7,587	63
55 Chemicals, in tanks	1,453	1,440	13	855	854	1
56 Chemicals, packaged	230	224	5	172	166	5
57 Cleansers and Adhesives	2,989	2,949	39	2,828	2,815	12
58 Explosives	209	207	2	118	116	1
59 Miscellaneous#	71,599	71,078	521	61,143	60,806	336
VI ACCESSORIES	72,953	72,320	633	32,032	31,689	342
60 Ferrous Metal	55,121	54,549	571	23,558	23,312	245
61 Nonferrous Metals	2,469	2,426	42	1,081	997	83
62 Rubber	1,549	1,548	1	1,094	1,093	1
63 Tools and Appliances	-	-	-	-	-	-
64 Machinery and Parts	3,688	3,684	3	1,996	1,995	-
65 Vehicles and Parts	7,374	7,372	1	2,403	2,402	1
66 Stationery, Printing	2,327	2,318	9	1,519	1,509	10
67 Personal	422	420	2	379	378	1
68 Amusement*	-	-	-	-	-	-
69 Miscellaneous*	-	-	-	-	-	-

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*Included in No.59

#Includes all Miscellaneous Manufactures - Group 701.

Principal source of information "Statistical Abstract of United States",1930 and 1934 editions.

Analysis 6.3 Supply and Demand of Petroleum - 1932

	MILLIONS OF BARRELS		
	TOTAL	CRUDE	REFINED PRODUCTS
Stock on hand January 1, 1932	632	370	262
Production - 1932	1,651	822*	829
Imports - 1932	74	45	30
Exports - 1932	103	27	76
To Refineries	846	846*	-
Domestic Consumption	836	31	805
Motor Fuel	374	-	374
Fuel Oil	339	31	308
Still Gas	41	-	41
Kerosene	33	-	33
Lubricants	17	-	17
Asphalt	13	-	13
Petroleum Coke	-	-	10
Road Oil	7	-	7
Wax	1	-	1
Miscellaneous	2	-	2
Stock on hand December 31, 1932	590	340	250

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* **Includes 37 million barrels of natural products.**

# **Includes 26 million barrels of natural products.**

Analysis 7.1 Freight Tonnage Originated and Reported by Carriers - 1932

COMMODITY GROUP	TOTAL	RAIL CAR LOT (000)	WATER CAR LOT (000)	WATER CARGO (000)	PIPE CARGO (000)
ALL COMMODITIES	759,020	630,989	15,584	29,620	82,828
I ROUGH MATERIAL	66,167	63,064	6	3,097	0
10 Sand, Stone, Gravel		46,641			
11 Timber		10,920			
12 Rough Vegetables		5,503			
19 Miscellaneous*		-			
II RAW MATERIAL	507,928	400,169	3,340	24,418	80,001
20 Grain		36,650			
21 Animal Foods		8,125			
22 Fresh Vegetables		7,874			
23 Live Animals		10,212			
24 Dry Fuels		282,599			
25 Crude Liquids		10,860			
26 Ores		23,011			
27 Lumber		12,817			
28 Fertilizer		8,021			
29 Miscellaneous*		-			
III SEMIPROCESSED MATERIAL	24,744	23,629	1,025	90	0
30 Primary Metals		3,489			
31 Fibre		6,242			
32 Hides		631			
33 Rubber		378			
34 Salt		2,576			
35 Ice		1,464			
36 Primary Paper		2,213			
37 Horticultural		367			
38 Scrap		6,269			
39 Miscellaneous*		-			
IV NECESSARIES	40,083	33,854	5,909	320	0
40 Dry Vegetables		6,019			
41 Edible Liquids		2,680			
42 Edible Animal Products		6,000			
43 Manufactured Foods		6,893			
44 Processed Cereals		10,024			
45 Furnishings		1,513			
46 Textiles and Leather		725			
47 Clothing*		-			
49 Miscellaneous*		-			
V AUXILIARIES	100,972	92,684	4,392	1,070	2,826
50 Masonry		20,488			
51 Power		35,888			
52 Lubricants		2,577			
53 Kindlers*		-			
54 Preservatives		3,353			
55 Chemicals, in tanks		1,444			
56 Chemicals, packaged		104			
57 Cleansers and Adhesives		983			
58 Explosives		136			
59 Miscellaneous#		27,711			
VI ACCESSORIES	19,123	17,589	910	624	0
60 Ferrous Metal		12,263			
61 Non-ferrous Metals		106			
62 Rubber		222			
63 Tools and Appliances*		-			
64 Machinery and Parts		1,254			
65 Vehicles and Parts		2,365			
66 Stationery, Printing		1,227			
67 Personal		152			
68 Amusement*		-			
69 Miscellaneous		-			

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* Included in No. 59.

# Includes all Miscellaneous Manufactures - I.C.C. Group 701.

Analysis 7.2 Freight Tonnage Reported by Shippers - 1933#

BUSINESS GROUPS	OUTBOUND TONNAGE				INBOUND TONNAGE				INBOUND FUEL			
	AGGREGATE (000)	PERCENTAGE BY RAIL WAY	HIGH WAY	WATER	AGGREGATE (000)	PERCENTAGE BY RAIL WAY	HIGH WAY	WATER	AGGREGATE (000)	PERCENTAGE BY RAIL WAY	HIGH WAY	WATER
ALL GROUPS	160,792	82%	6%	12%	87,167	77%	6%	17%	42,244	78%	3%	19%
I ROUGH MATERIAL*	11,700	54%	14%	32%	499	76%	17%	7%	151	57%	10%	33%
34 Sand, Stone, Gravel	11,495	53	14	33	415	74	17	9	150	57	10	33
8b Timber	204	93	1	6	84	85	15	-	1	100	-	-
II RAW MATERIAL*	51,462	93%	2%	5%	11,828	87%	9%	4%	3,994	67%	1%	32%
10aGrain	1,615	83	ø	17	1,447	93	ø	7	7	100	-	-
16 Fresh Fruits & Vegetables	1,353	67	18	15	1,077	60	22	18	6	99	1	-
22 Livestock and Poultry	117	68	32	ø	712	38	62	ø	2	57	43	-
12 Coal, Coke and Fuel	38,704	97	1	2	3,306	95	4	1	3,155	61	ø	39
26 Ores and Concentrates	5,090	78	ø	22	2,742	99	1	-	632	93	1	6
8c Lumber	4,385	85	2	13	2,275	87	9	4	173	95	3	2
03 Barrels, Cooperage Material	198	87	10	3	270	64	27	9	19	88	11	1
III SEMIPROCESSED MATERIAL*	3,688	77%	16%	7%	5,793	75%	11%	14%	3,267	85%	2%	13%
13 Cotton, Cotton Linters	584	87	8	5	567	75	25	ø	108	98	2	-
29 Paper, Paper Products	3,073	75	17	8	5,211	75	10	15	3,155	84	3	13
35 Horticultural Material	31	88	11	1	15	89	10	1	4	100	-	-
IV NECESSARIES*	20,418	85%	9%	6%	23,262	83%	7%	10%	7,068	78%	5%	17%
04 Beverages and Liquors	599	57	42	1	388	88	12	ø	76	42	54	4
36 Sugar, Syrups and Molasses	2,182	77	10	13	6,397	86	7	7	1,200	95	ø	5
39 Vegetable Oil, Meal & Cake	739	78	12	10	545	71	22	7	76	93	7	-
27 Packing House Products	4,349	93	7	-	1,954	93	7	ø	1,230	95	4	1
02 Bakery Goods, Confectionery	436	66	20	14	844	61	19	20	206	89	3	8
09 Canned Goods	793	73	18	9	394	52	38	10	1,155	12	1	87
18 Groceries	847	52	37	11	1,320	75	17	8	195	97	3	-
10bCereals, Flour, Mill Products	9,209	94	3	3	8,596	92	2	6	596	94	2	4
17 Furniture and Furnishings	146	77	14	9	282	84	14	2	178	87	4	9
31 Porcelain, China, etc.	59	90	8	2	22	97	3	ø	71	99	1	-
21 Leather and Leather Goods	153	80	18	2	449	94	4	2	325	88	9	3
37 Textiles	528	79	15	6	1,998	47	9	44	1,640	88	11	1
07 Boots and Shoes	349	9	5	86	107	67	31	2	51	82	1	17
15 Dry Goods, Clothing	30	66	24	10	65	82	13	5	68	69	31	ø
V AUXILIARIES*	58,657	78%	5%	17%	21,590	70%	3%	27%	18,033	80%	3%	17%
8a Masonry Materials (except wood)	12,048	92	5	3	3,520	88	3	9	2,188	88	3	9
30 Petroleum, Crude and Refined	31,229	68	4	28	5,788	33	1	66	405	33	17	50
28 Paints, Varnishes and Gums	49	53	44	3	111	86	11	3	36	93	7	-
11 Chemicals	3,351	91	7	2	3,030	65	2	33	426	97	1	2
40 Miscellaneous Commodities	11,980	87	8	5	9,140	87	5	8	14,978	80	2	18
VI ACCESSORIES*	14,866	82%	12%	6%	24,195	73%	5%	22%	9,732	74%	3%	23%
19 Iron and Steel, Structural	2,759	87	8	5	5,772	70	ø	30	2,832	30	ø	70
20 Iron and Steel Articles	7,240	86	9	5	9,850	66	3	31	2,845	96	1	3
24 Metals, Non-ferrous	705	78	11	11	723	93	5	2	493	79	20	1
33 Rubber, Rubber Articles, Tires	390	62	33	5	655	88	8	4	539	93	6	1
23 Machinery, Vehicles, etc.	1,520	90	6	4	2,173	96	3	1	1,280	85	4	11
32 Plumbing and Heating Supplies	129	78	12	10	269	92	2	6	131	98	1	1
01 Automotive Vehicles & Parts	1,557	58	39	3	3,489	67	18	15	1,285	94	1	5
05 Boats, Marine Equipment	4	92	3	5	80	98	ø	2	71	99	1	-
06 Books and Periodicals	161	56	17	27	630	92	4	4	30	100	-	-
14 Department Store Merchandise	167	82	8	10	226	88	8	4	74	92	8	-
38 Tobacco, Tobacco Products	233	84	4	12	328	92	6	2	150	98	2	-
25 Musical Instruments & Supplies	1	96	4	-	1	83	17	-	4	100	-	-

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# As reported by respondents to Shippers' Inquiry.

ø Less than ½%.

Analysis 7.3 Freight Ton Miles Reported by Shippers - 1933#

BUSINESS GROUPS	OUTBOUND TON MILES				INBOUND TON MILES				INBOUND FUEL TON MILES			
	AGGREGATE ø	PERCENTAGE BY RAIL WAY	HIGH WAY	WATER	AGGREGATE ø	PERCENTAGE BY RAIL WAY	HIGH WAY	WATER	AGGREGATE ø	PERCENTAGE BY RAIL WAY	HIGH WAY	WATER
ALL GROUPS	66,928	69%	2%	29%	36,729	58%	2%	40%	9,101	76%	1%	23%
I ROUGH MATERIAL*	1,789	37%	1%	62%	79	84%	2%	14%	35	41%	3%	56%
34 Sand, Stone, Gravel	1,647	35	1	64	46	73	2	25	35	41	3	56
8b Timber	142	67	1	32	33	99	1	-	-	100	-	-
II RAW MATERIAL*	20,113	80%	1%	19%	4,020	88%	3%	9%	618	89%	‡%	11%
10aGrain	669	67	‡	33	559	85	‡	15	1	100	-	-
16 Fresh Fruits & Vegetables	1,441	75	7	18	1,095	78	4	18	1	100	‡	-
22 Livestock & Poultry	74	97	3	‡	126	78	19	3	-	80	20	-
12 Coal, Coke & Fuel	11,080	98	‡	2	750	94	4	2	439	84	‡	16
26 Ores & Concentrates	2,963	43	‡	57	743	100	‡	-	141	100	‡	‡
8c Lumber	3,806	62	‡	38	676	92	2	6	30	94	1	5
03 Barrels, Cooperage Material	77,237	96	1	3	68	69	5	26	3	99	1	‡
III SEMI-PROCESSED MATERIAL*	1,828	77%	3%	20%	2,685	66%	2%	32%	640	88%	‡%	12%
13 Cotton, Cotton Linters	276	91	2	7	121	88	12	‡	25	100	‡	-
29 Paper, Paper Products	1,514	74	3	23	2,558	65	1	34	613	88	‡	12
35 Horticultural Material	37	96	1	3	5	96	4	‡	1	100	-	-
IV NECESSARIES*	12,181	86%	2%	12%	8,494	80%	2%	18%	1,350	85%	‡%	15%
04 Beverages & Liquors	287	86	13	1	194	94	5	1	5	81	14	5
36 Sugar, Syrups & Molasses	1,119	83	2	15	1,098	85	‡	15	388	62	‡	38
39 Vegetable Oil, Meal & Cake	552	50	2	48	265	33	2	65	18	98	2	-
27 Packing House Products	3,572	98	2	‡	1,024	96	3	1	248	98	‡	2
02 Bakery Goods, Confectionery	235	65	5	30	424	52	7	41	66	81	‡	19
09 Canned Goods	734	61	3	36	169	65	7	28	51	80	‡	20
18 Groceries	399	54	19	27	820	59	6	35	33	100	‡	-
10bCereals, Flour, Mill Products	4,696	92	1	7	3,560	85	‡	15	105	95	‡	5
17 Furniture & Furnishings	73	76	5	19	117	90	3	7	49	82	1	17
31 Porcelain, China, etc.	18	87	3	10	16	100	‡	‡	11	100	‡	-
21 Leather & Leather Goods	54	93	4	3	232	95	‡	5	80	96	1	3
37 Textiles	250	79	5	16	511	81	3	16	262	98	2	‡
07 Boots & Shoes	158	4	2	94	25	86	6	8	14	70	‡	30
15 Dry Goods, Clothing	28	54	3	43	34	94	3	3	13	97	3	‡
V AUXILIARIES*	25,599	54%	1%	45%	13,242	33%	‡%	67%	4,786	67%	1%	32%
8a Masonry Materials (except wood)	2,674	93	5	2	720	70	1	29	492	76	‡	24
30 Petroleum, Crude & Refined	16,653	35	‡	65	7,798	10	‡	90	583	4	‡	96
28 Paints, Varnishes & Gums	21	75	16	9	95	92	1	7	9	99	1	-
11 Chemicals	1,014	90	3	7	1,095	33	‡	67	61	100	‡	‡
40 Miscellaneous	5,236	86	2	12	3,531	76	1	23	3,638	76	1	23
VI ACCESSORIES*	5,416	76%	5%	19%	8,206	58%	2%	40%	1,668	85%	‡%	15%
19 Iron & Steel, Structural	892	71	5	24	1,593	37	‡	63	278	49	‡	51
20 Iron & Steel Articles	1,863	73	3	24	2,799	35	1	64	419	93	‡	7
24 Metals, Non-ferrous	434	63	2	35	306	93	1	6	117	98	2	‡
33 Rubber, Rubber Articles, Tires	261	63	19	18	393	84	3	13	85	98	1	1
23 Machinery, Vehicles, etc.	898	91	2	7	885	88	1	11	257	86	‡	14
32 Plumbing & Heating Supplies	91	77	4	19	193	64	‡	36	33	86	‡	14
01 Automotive Vehicles & Parts	534	82	12	6	1,354	81	7	12	383	93	‡	7
05 Boats, Marine Equipment	9	98	‡	2	22	87	‡	13	22	100	‡	-
06 Books & Periodicals	129	69	4	27	426	91	1	8	4	100	-	-
14 Department Store Merchandise	152	76	2	22	102	74	2	24	20	100	‡	-
38 Tobacco, Tobacco Products	149	89	3	8	128	94	2	4	45	100	‡	-
25 Musical Instruments & Supplies	≠	89	11	-	≠	91	9	-	≠	100	-	-

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# As reported by respondents to Shippers' Inquiry.

‡ Less than ½%.

≠ Less than 500,000 Ton Miles.

ø All aggregates are shown in millions.

Analysis 7.4 Average Haul (In Miles) Reported by Shippers - 1933#

BUSINESS GROUP	OUTBOUND SHIPMENTS AVERAGE HAUL			INBOUND SHIPMENTS AVERAGE HAUL			INBOUND FUEL SHIPMENTS AVERAGE HAUL		
	RAIL-WAY	HIGH-WAY	WATER	RAIL-WAY	HIGH-WAY	WATER	RAIL-WAY	HIGH-WAY	WATER
ALL GROUPS	320	99	999	351	116	1,026	211	39	237
I ROUGH MATERIAL*	105	14	289	176	16	310	172	70	400
34 Sand, Stone, Gravel	93	14	278	110	14	311	172	70	400
8b Timber	505	-	3,246	462	261	-	196	-	-
II RAW MATERIAL*	339	160	1,306	345	111	783	203	29	55
10aGrain	335	59	799	354	165	815	258	-	-
16 Fresh Fruits & Vegetables	1,184	435	1,286	1,322	198	1,020	173	108	-
22 Livestock & Poultry	900	55	805	365	55	954	222	71	-
12 Coal, Coke & Fuel	290	31	257	225	252	294	194	24	55
26 Ores & Concentrates	322	139	1,516	274	22	-	241	13	-
8c Lumber	631	79	2,562	314	74	461	177	42	486
03 Barrels, Cooperage Material	434	45	279	273	46	702	196	17	75
III SEMIPROCESSED MATERIAL*	495	82	1,351	411	66	1,070	204	28	177
13 Cotton, Cotton Linters	497	96	618	249	109	90	245	21	-
29 Paper, Paper Products	485	81	1,446	429	55	1,071	202	28	177
35 Horticultural Material	1,308	147	1,780	420	136	90	394	-	-
IV NECESSARIES*	601	163	1,162	354	102	655	207	26	168
04 Beverages & Liquors	726	148	464	535	234	923	147	19	100
36 Sugar, Syrups & Molasses	557	71	580	172	11	364	212	37	2,334
39 Vegetable Oil, Meal & Cake	486	102	3,612	225	37	4,361	259	64	-
27 Packing House Products	867	249	121	548	193	1,062	207	29	369
02 Bakery Goods, Confectionery	533	141	1,173	429	193	1,035	292	161	774
09 Canned Goods	769	179	3,652	542	78	1,154	303	20	10
18 Groceries	490	235	1,212	491	235	2,551	175	11	-
10bCereals, Flour, Mill Products	500	84	1,212	381	69	965	179	16	204
17 Furniture & Furnishings	490	193	1,092	444	96	1,448	263	56	500
31 Porcelain, China, etc.	299	125	1,787	773	115	800	164	70	-
21 Leather & Leather Goods	413	80	566	525	51	1,361	270	28	336
37 Textiles	471	162	1,285	446	75	92	178	26	101
07 Boots & Shoes	170	186	500	301	46	974	239	30	500
15 Dry Goods, Clothing	761	119	3,777	607	136	331	281	18	600
V AUXILIARIES*	298	120	1,186	292	86	1,506	223	58	506
8a Masonry Materials (except wood)	225	180	200	162	95	660	196	30	604
30 Petroleum, Crude & Refined	271	78	1,234	400	52	1,842	157	18	2,766
28 Paints, Varnishes & Gums	606	154	1,722	913	70	2,201	286	34	-
11 Chemicals	298	132	1,146	182	33	739	148	15	10
40 Miscellaneous Commodities	430	124	1,004	336	97	1,149	230	73	325
VI ACCESSORIES*	337	142	1,230	272	116	513	197	20	105
19 Iron & Steel, Structural	265	211	1,392	145	65	590	159	41	72
20 Iron & Steel Articles	219	92	1,161	151	49	598	143	18	315
24 Metals, Non-ferrous	500	111	1,910	425	111	1,088	296	23	50
33 Rubber, Rubber Articles, Tires	679	384	2,268	572	248	1,902	168	27	188
23 Machinery, Vehicles, etc.	596	182	1,002	374	129	2,983	204	13	257
32 Plumbing & Heating Supplies	702	232	1,318	502	134	4,041	226	53	-
01 Automotive Vehicles & Parts	489	105	600	474	140	313	293	21	400
05 Boats, Marine Equipment	2,746	80	995	252	80	1,594	323	4	-
06 Books & Periodicals	987	211	811	671	180	1,328	140	-	-
14 Department Store Merchandise	847	215	2,034	382	122	2,910	301	8	-
38 Tobacco, Tobacco Products	687	426	418	401	113	787	308	18	-
25 Musical Instruments & Supplies	96	274	-	338	170	-	261	-	-

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# As reported by respondents to Shippers' Inquiry.

Analysis 7.5 Relation of Rail Freight Traffic to Area and Population

DISTRICT	AGGREGATE UNITS				PERCENTAGE DISTRIBUTION				UNITS PER SQ.MILE			CARS PER 1000 POPULATION
	SQUARE MILES (000)	ROUTE MILES (000)	POPULATION 1930 (000)	CARS* (000)	SQUARE MILES	ROUTE MILES	POPULATION 1930	CARS*	ROUTE MILES	POPULATION	CARS*	
ALL DISTRICTS												
United States	2,974	243	123	56	100%	100%	100%	100%	82	41	19	453
Eastern	364	67	61	29	12	28	50	52	186	169	79	467
Southern	437	43	25	10	15	17	20	18	97	57	23	403
Western	2,173	133	37	17	73	55	30	30	61	17	8	462
New England	62	8	8	3	2	3	7	5	123	132	47	357
Trunk Line	112	21	29	13	4	9	23	23	193	256	114	447
Central	190	38	25	13	6	16	20	24	202	129	68	528
Pocahontas	64	8	4	3	2	3	3	6	121	65	54	835
Southeastern	373	35	21	7	13	14	17	12	94	56	18	317
Western Trunk Line	566	59	15	9	19	24	12	15	105	26	15	585
Southwestern	552	36	11	4	19	15	9	8	65	21	8	395
Pacific Northwest	490	20	4	2	16	8	3	3	41	74	3	444
Pacific Southwest	565	18	7	2	19	8	6	4	32	12	4	318
METROPOLITAN DISTRICTS												
United States	-	-	37	22	-	-	-	-	-	-	-	589
Eastern	-	-	26	14	-	-	-	-	-	-	-	521
Southern	-	-	3	2	-	-	-	-	-	-	-	949
Western	-	-	8	6	-	-	-	-	-	-	-	695
New England	-	-	3	1	-	-	-	-	-	-	-	512
Trunk Line	-	-	14	6	-	-	-	-	-	-	-	413
Central	-	-	9	6	-	-	-	-	-	-	-	684
Pocahontas	-	-	#	1	-	-	-	-	-	-	-	2,198
Southeastern	-	-	2	2	-	-	-	-	-	-	-	776
Western Trunk Line	-	-	3	3	-	-	-	-	-	-	-	1,116
Southwestern	-	-	1	1	-	-	-	-	-	-	-	711
Pacific Northwest	-	-	1	#	-	-	-	-	-	-	-	464
Pacific Southwest	-	-	3	1	-	-	-	-	-	-	-	264
MAJOR DISTRICTS												
United States	-	-	18	16	-	-	-	-	-	-	-	881
Eastern	-	-	9	8	-	-	-	-	-	-	-	838
Southern	-	-	3	3	-	-	-	-	-	-	-	980
Western	-	-	5	5	-	-	-	-	-	-	-	896
New England	-	-	2	1	-	-	-	-	-	-	-	532
Trunk Line	-	-	4	3	-	-	-	-	-	-	-	900
Central	-	-	4	4	-	-	-	-	-	-	-	897
Pocahontas	-	-	1	1	-	-	-	-	-	-	-	1,322
Southeastern	-	-	2	2	-	-	-	-	-	-	-	869
Western Trunk Line	-	-	2	2	-	-	-	-	-	-	-	1,002
Southwestern	-	-	2	1	-	-	-	-	-	-	-	846
Pacific Northwest	-	-	1	#	-	-	-	-	-	-	-	840
Pacific Southwest	-	-	1	1	-	-	-	-	-	-	-	714
MINOR DISTRICTS												
United States	-	-	68	18	-	-	-	-	-	-	-	266
Eastern	-	-	26	7	-	-	-	-	-	-	-	279
Southern	-	-	19	4	-	-	-	-	-	-	-	232
Western	-	-	23	6	-	-	-	-	-	-	-	280
New England	-	-	4	1	-	-	-	-	-	-	-	195
Trunk Line	-	-	11	4	-	-	-	-	-	-	-	331
Central	-	-	11	3	-	-	-	-	-	-	-	260
Pocahontas	-	-	3	2	-	-	-	-	-	-	-	570
Southeastern	-	-	16	3	-	-	-	-	-	-	-	167
Western Trunk Line	-	-	9	3	-	-	-	-	-	-	-	301
Southwestern	-	-	8	2	-	-	-	-	-	-	-	245
Pacific Northwest	-	-	2	1	-	-	-	-	-	-	-	328
Pacific Southwest	-	-	4	1	-	-	-	-	-	-	-	278

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* Cars Originated and Terminated.

# Less than 500.

Analysis 7.6 Production and Distribution of Crude Petroleum and Petroleum Products - 1932

YEAR	TONS PRODUCED (000)	TONS ORIGINATED BY CARRIERS			
		RAILWAYS (000)	PIPE LINES (TRUNK) (000)	WATERWAYS	
				COASTWISE AND INLAND (000)	INTER-COASTAL (000)
CRUDE PETROLEUM					
1920	68,831	6,435	39,457	#	#
1921	73,377	5,038	38,832	#	#
1922	86,640	5,937	48,123	#	#
1923	113,816	8,403	48,651	#	#
1924	110,946	8,412	55,987	#	#
1925	118,686	11,245	61,420	#	1,789
1926	119,794	10,744	61,744	28,509	1,827
1927	140,036	10,531	73,112	27,664	1,553
1928	140,089	7,632	77,823	22,952	307
1929	156,538	6,630	85,446	36,816	151
1930	139,551	6,598	86,615	29,307	20
1931	132,258	7,448	83,336	33,950	#
1932	122,014	2,803	79,376	28,647	32
1933	139,685	4,702	83,548	36,097	91
PETROLEUM PRODUCTS					
1920	36,984	29,616	-	#	#
1921	38,430	27,213	-	#	#
1922	66,870	30,870	-	#	#
1923	76,385	36,641	-	#	#
1924	86,377	41,298	-	#	#
1925	99,947	46,273	-	#	2,118
1926	105,519	48,938	-	59,706	2,891
1927	112,743	51,663	-	60,342	3,341
1928	124,805	58,480	-	51,445	2,817
1929	133,082	64,340	-	57,453	3,854
1930	120,390	62,901	-	56,900	3,431
1931	117,197	55,615	2,533	58,683	#
1932	118,768	46,706	3,452	51,354	1,680
1933	124,232	45,464	4,020	64,826	2,925

Not Available.

Tons Produced from statistical appendix to Minerals Year Book of Bureau of Mines; Tons Originated - Rail, from I.C.C. freight commodity statistics; Waterways, (Coastwise and Inland) from reports of Chief of Engineers U.S. Army; Intercoastal from U.S. Shipping Board Annual Report No. 317; Pipe Lines from I.C.C. annual statistics. Prior to 1931 these pipe line statistics showed only tons transported and for purposes of this statement it is assumed the ratio of tons originated to tons transported 1926 - 1931 was same as for 1931.

Analysis 7.7 Tonnage Moved by Water Carriers, (Domestic Only)

MODITY GROUP	YEAR	
	1928	1932
ALL COMMODITIES	412,431,827	272,059,367
I ROUGH MATERIAL	101,648,311	46,987,248
10 Sand, Stone, Gravel	68,507,010	33,229,888
11 Timber	33,141,301	13,757,360
12 Rough Vegetables		
19 Miscellaneous		
II RAW MATERIAL	242,296,818	150,465,541
20 Grain	7,389,670	6,351,871
21 Animal Feeds		
22 Fresh Vegetables		
23 Live Animals		
24 Dry Fuels	102,107,505	73,386,435
25 Crude Liquids	58,447,704	57,822,065
26 Ores	59,645,395	4,886,874
27 Lumber	11,709,611	5,303,247
28 Fertilizer	2,996,933	2,715,049
29 Miscellaneous		
III SEMIPROCESSED MATERIAL	946,617	1,281,401
30 Primary Metals		
31 Fibres	946,617	1,281,401
32 Hides		
33 Rubber		
34 Salt		
35 Ice		
36 Primary Paper		
37 Horticultural		
38 Scrap		
39 Miscellaneous		
IV NECESSARIES	6,045,993	5,311,528
40 Dry Vegetables		
41 Edible Liquids	319,414	285,615
42 Edible Animal Products		
43 Manufactured Foods	4,117,720	3,505,614
44 Processed Cereals	1,608,859	1,520,299
45 Furnishings		
46 Textiles and Leather		
47 Clothing		
49 Miscellaneous		
V AUXILIARIES	53,457,271	64,755,685
50 Masonry	2,101,362	1,822,731
51 Power	14,158,878	20,512,739
52 Lubricants	3,459,389	3,377,823
53 Kindlers		
54 Preservatives	762,222	493,130
55 Chemicals, in tanks		
56 Chemicals, packaged		
57 Cleansers and Adhesives		
58 Explosives		
59 Miscellaneous	[illegible],[illegible],420	38,549,262
VI ACCESSORIES	8,036,817	3,257,964
60 Ferrous Metal	6,052,821	2,670,066
61 Non-ferrous Metals	1,983,996	587,898
62 Rubber		
63 Tools and Appliances		
64 Machinery and Parts		
65 Vehicles and Parts		
66 Stationery, Printing		
67 Personal		
68 Amusement		
69 Miscellaneous		

Source - Annual Report of Chief of Engineers, U.S. Army.

Analysis 8.1 Origin and Destination of Rail Freight Commodities - 1932

RAIL CARRIER DISTRIBUTION

COMMODITY GROUP	TONS ORIGINATED UNITED STATES (000)	PER CENT OF TONS ORIGINATED						TONS TERMINATED UNITED STATES (000)	PER CENT OF TONS TERMINATED					
		NEW ENGLAND	CENTRAL EAST	POCAHONTAS	SOUTHERN	NORTH WEST	SOUTH WEST		NEW ENGLAND	CENTRAL EAST	POCAHONTAS	SOUTHERN	NORTH WEST	SOUTH WEST
ALL COMMODITIES	630,989	2%	42%	12%	13%	14%	17%	621,812	5%	47%	6%	11%	16%	15%
I ROUGH MATERIAL	63,064	2	23	3	18	29	26	62,830	2	25	3	16	28	26
Sand, Stone, Gravel	46,641	2	29	3	19	21	26	45,892	2	30	3	17	21	27
Timber	10,920	5	8	3	22	38	25	11,587	6	12	3	17	37	26
Rough Vegetables	5,503	-	7	-	-	72	21	5,351	-	7	-	-	71	22
Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
II RAW MATERIAL	400,169	1%	44%	18%	14%	12%	13%	384,980	4%	52%	8%	10%	14%	12%
Grain	36,650	#	20	1	8	36	33	39,205	2	21	1	10	34	33
Animal Feeds	8,125	4	25	1	15	22	33	8,722	11	27	2	14	20	26
Fresh Vegetables	7,874	1	12	1	23	15	48	8,420	8	50	1	9	14	17
Live Animals	10,212	#	17	1	5	47	31	10,397	2	23	1	4	43	27
Dry Fuels	282,599	#	52	24	13	6	5	262,197	4	61	11	9	10	5
Crude Liquids	10,860	9	26	1	5	10	50	10,454	11	27	#	6	18	37
Ores	23,011	1	41	3	8	24	24	23,412	2	56	4	6	7	26
Lumber	12,817	3	7	3	39	20	28	14,333	5	29	2	22	18	24
Fertilizer	8,021	4	20	3	62	3	9	7,840	5	21	3	60	3	8
Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
III SEMIPROCESSED MATERIAL	23,629	6%	46%	2%	13%	12%	21%	25,628	7%	48%	2%	13%	12%	18%
Primary Metals	3,489	1	72	1	11	8	8	3,603	5	70	1	10	7	8
Fibres	6,242	3	16	2	25	14	41	6,316	7	16	3	25	13	36
Hides	631	8	42	2	5	29	15	619	14	46	2	6	25	8
Rubber	378	10	87	-	1	1	1	372	3	90	∅	2	4	1
Salt	2,576	∅	48	1	#	5	46	3,264	5	38	2	11	18	26
Ice	1,464	15	28	#	6	31	20	1,445	14	28	#	6	32	20
Primary Paper	2,213	34	26	4	7	22	7	3,265	15	31	2	6	16	10
Horticultural	378	4	27	1	12	19	37	399	4	32	1	12	18	32
Scrap	6,269	4	71	3	11	5	5	6,345	3	75	3	10	5	5
Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IV NECESSARIES	33,854	4%	30%	1%	10%	28%	26%	35,567	10%	40%	2%	12%	17%	20%
Dry Vegetables	6,019	15	23	1	10	29	23	6,398	15	34	2	10	16	23
Edible Liquids	2,680	4	22	#	21	19	34	2,748	4	32	1	18	17	28
Edible Animal Products	6,000	1	28	1	7	42	21	6,106	14	49	2	10	15	10
Manufactured Foods	6,893	2	34	1	10	26	27	7,655	4	35	2	13	21	25
Processed Cereals	10,024	#	29	1	8	29	33	10,338	7	40	2	13	17	21
Furnishings	1,513	1	66	12	6	9	7	1,562	9	58	3	7	12	12
Textiles and Leather	725	9	26	3	42	7	13	760	21	33	1	21	10	14
Clothing*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V AUXILIARIES	92,684	5%	47%	2%	10%	10%	26%	95,262	7%	44%	2%	11%	17%	19%
Masonry	20,488	5	47	3	12	15	20	21,248	8	44	3	11	17	18
Power	35,888	4	33	1	12	9	42	36,890	5	33	2	14	22	25
Lubricants	2,577	1	57	1	3	4	34	2,481	4	46	2	9	14	26
Kindlers*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservatives	3,353	5	58	3	16	7	11	3,437	7	53	3	13	15	10
Chemicals, in tanks	1,444	1	47	6	17	3	26	1,429	3	45	5	17	5	26
Chemicals, packaged	104	20	32	1	5	25	16	104	18	43	#	4	21	14
Cleansers and Adhesives	983	12	54	1	7	13	14	1,012	7	51	2	11	14	16
Explosives	136	7	52	1	6	13	21	133	3	44	6	11	19	18
Miscellaneous#	27,711	7	62	3	7	11	11	28,528	10	57	3	8	11	12
VI ACCESSORIES	17,589	3%	78%	2%	5%	6%	7%	17,545	5%	67%	2%	6%	10%	11%
Ferrous Metal	12,263	1	83	2	4	3	6	12,238	5	71	2	5	8	10
Non-Ferrous Metals	106	18	24	#	#	10	48	155	12	39	#	#	23	25
Rubber	222	5	83	#	1	6	5	215	6	47	2	9	17	20
Tools and Appliances	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Machinery and Parts	1,254	9	57	2	6	17	10	1,266	7	51	2	10	15	14
Vehicles and Parts	2,365	#	80	1	4	8	7	2,301	6	56	2	9	12	15
Stationery, Printing	1,227	24	52	5	4	15	1	1,219	10	67	2	4	13	4
Personal	152	∅	19	25	52	2	3	151	1	44	5	16	7	28
Amusement*	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Included in No. 59. # Includes all Miscellaneous Manufactures - I.C.C. Group 701 ∅ Less than .05%

Analysis 8.2 Production Areas of Crude Petroleum - 1932

DISTRICT STATE	PRODUCTION		PRODUCING WELLS		NEW WELLS	
	AGGREGATE BARRELS (000)	PER CENT OF UNITED STATES	NUMBER	DAILY PRODUCTION PER WELL *	NUMBER	ESTIMATED DAILY PRODUCTION *
UNITED STATES	785,159	100%	321,500	7	10,444	1,540
MID-CONTINENT	493,034	63%	122,320	12	7,988	1,936
Kansas	34,848	4	18,300	5	363	532
Oklahoma	153,244	20	57,100	7	643	1,120
East Texas proper	139,084	18	9,400	51	5,641	(1)2,500
West Texas	63,335	9	3,090	57	144	235
Remainder of Texas except Gulf Coast	68,209	9	28,400	8	1,037	198
New Mexico	12,062	1	490	74	44	3,898
Arkansas	12,051	1	2,880	11	4	178
Northern Louisiana	10,191	1	2,660	10	112	334
Missouri	10	-	(2)	-	-	-
CALIFORNIA	178,128	22%	8,900	55	184	852
GULF COAST	53,466	7%	3,130	48	514	814
Texas Gulf Coast	41,850	5	2,740	43	420	780
Louisiana Gulf Coast	11,616	2	390	84	95	963
APPALACHIAN	29,667	4%	151,060	5	1,463	16
New York	3,508	-	17,680	5	(3)	(3)
Pennsylvania	12,412	1	80,380	4	(4) 908	(4) 3
West Virginia	3,876	1	18,850	6	46	14
Central and Eastern Ohio	3,579	1	20,640	5	230	19
Kentucky	6,287	1	13,510	1	279	57
Tennessee	5	-	(2)	-	-	-
ROCKY MOUNTAIN	17,410	2%	4,810	9	65	193
Montana	2,457	-	1,420	5	30	302
Wyoming	13,418	2	3,200	11	31	109
Colorado	1,136	-	190	16	4	29
Northwest New Mexico	393	-	(3)	(5)	(5)	(5)
Utah and Alaska	6	-	(6)	(6)	(6)	(6)
LIMA - INDIANA	8,004	1%	14,900	2	162	462
Northwestern Ohio	1,065	-	13,890	2	49	34
Northeastern Indiana	29	-	365	2	-	-
Michigan	6,910	1	645	30	113	647
ILLINOIS - INDIANA	5,450	1%	16,310	9	66	40
Southwest Indiana	777	-	1,140	2	54	47
Illinois	4,673	1	15,170	8	12	7
OTHER	-	-%	(7) 70	-	(8) 2	(8) 268

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(1) Based on short gages averaging 30 minutes.
(2) Not available separately but included under "other".
(3) Included under Pennsylvania.
(4) Includes New York.
(5) Included under New Mexico in the Mid-Continent District.
(6) The number of wells in Alaska is included under "other" but no further information is available. Utah is included under "other" in all 4 columns.
(7) Includes Alaska, Missouri and Utah.
(8) Includes Alabama, Mississippi and Utah.
* Barrels.

Analysis 8.3 Patroleum Refinery Capacity as of January 1, 1933

LOCATION	NUMBER OF REFINERIES OPÈRATING	CAPACITY IN BARRELS PER DAY	NUMBER OF REFINERIES SHUT DOWN	CAPACITY IN BARRELS PER DAY	NUMBER OF REFINERIES BEING BUILT	CAPACITY IN BARRELS PER DAY	TOTAL NUMBER OF REFINERIES	CAPACITY IN BARRELS PER DAY
UNITED STATES	372	3,445,118	133	444,392	18	31,545	523	3,921,055
California	44	783,135	17	117,600	-	-	61	900,735
East Coast	23	563,000	3	39,000	1	15,000	27	617,000
Texas-Gulf Coast	14	497,500	4	18,500	-	-	18	516,000
Oklahoma,Kansas,Missouri	63	449,660	16	49,980	5	13,625	84	513,265
Indiana,Illinois,Kentucky	36	438,688	10	12,050	-	-	46	450,738
Texas Inland	89	271,570	38	124,215	6	2,250	133	398,035
Louisiana Gulf Coast	4	132,000	3	32,000	-	-	7	164,000
Appalachian	45	149,530	9	10,750	-	-	54	160,280
Rocky Mountains	39	80,485	29	23,397	6	670	74	104,552
Arkansas and Louisiana Inland	15	79,550	4	16,900	-	-	19	96,450
TYPES OF PROCESS								
All Types	372	3,445,118	133	444,392	18	31,545	523	3,921,055
Complete	83	1,894,730	4	12,500	-	-	87	1,907,230
Skimming	217	958,963	111	381,342	18	31,545	346	1,368,850
Skimming and Asphalt	21	230,200	1	22,000	-	-	22	252,200
Skimming and Lube	17	189,000	4	4,750	-	-	21	193,750
Topping	18	103,150	4	14,200	-	-	22	117,350
Asphalt	9	47,700	7	7,800	-	-	16	55,500
Skimming,Lube and Asphalt	2	22,500	1	-	-	-	3	22,500
Lube	4	1,575	1	1,800	-	-	5	3,375
Petrolatum	1	300	-	-	-	-	1	300

Source:

Analysis 8.4 Location of Petroleum Refineries East of Mississippi River

DISTRICT	OPERATING REFINERIES				SHUT DOWN PLANTS*	
	NUMBER OF REFINERIES	1932 ANNUAL CAPACITY (000) BARRELS	1932 PRODUCTION RUNS TO STILLS (000) BARRELS	CAPACITY UTILIZED	NUMBER OF REFINERIES	1932 ANNUAL CAPACITY (000) BARRELS
UNITED STATES	372	1,257,498	819,997	65%	151	173,737
EAST OF THE MISSISSIPPI RIVER	104	420,204	303,428	72%	23	28,035
SOUTHWEST	185	522,068	337,898	65%	76	93,987
NORTH PACIFIC AND SOUTH PACIFIC	83	315,226	178,671	57%	52	51,715
EAST OF THE MISSISSIPPI RIVER						
EAST COAST	23	205,497	162,534	79%	4	19,710
Georgia	1	1,825	-	-	1	1,460
Maryland	3	20,075	-	-	-	-
Baltimore	3	20,075	-	-	-	-
Massachusetts	2	17,520	-	-	-	-
E. Braintree	1	7,300	-	-	-	-
Everett	1	10,220	-	-	-	-
New Jersey	6	93,075	-	-	2	12,775
Bayonne	2	74,825	-	-	1	10,950
Paulsboro	1	7,300	-	-	-	-
Warners	1	6,500	-	-	-	-
New York	1	6,935	-	-	1	5,475
Brooklyn and Long Island City	1	6,935	-	-	-	-
Staten Island	-	-	-	-	1	5,475
Pennsylvania	6	60,773	-	-	-	-
Girard Point	1	10,950	-	-	-	-
Marcus Hook	4	31,573	-	-	-	-
Philadelphia	1	18,250	-	-	-	-
Rhode Island	2	2,373	-	-	-	-
South Carolina	1	2,373	-	-	-	-
Virginia	1	548	-	-	-	-
APPALCHIAN	45	54,584	34,136	63%	9	3,925
New York	4	7,885	-	-	-	-
Wellsville	1	3,650	-	-	-	-
Ohio	4	11,162	-	-	2	913
Cleveland	2	7,665	-	-	-	-
Heath	1	3,285	-	-	-	-
Pennsylvania	31	28,966	-	-	7	3,012
Franklin	2	3,650	-	-	-	-
Pittsburgh	2	3,285	-	-	1	365
Rouseville	2	4,015	-	-	-	-
West Virginia	6	6,571	-	-	-	-
INDIANA,ILLINOIS,KENTUCKY,ETC.	36	160,123	106,758	67%	10	4,400
Illinois	9	46,719	-	-	2	2,446
Lawrenceville	1	5,840	-	-	-	-
Lockport	1	7,300	-	-	-	-
Robinson	1	3,650	-	-	-	-
Wood River	2	24,455	-	-	1	2,008
Indiana	5	71,905	-	-	1	18
E. Chicago	4	35,770	-	-	-	-
Whiting	1	36,135	-	-	-	-
Kentucky	8	10,440	-	-	3	293
Louisville	3	4,015	-	-	-	-
Michigan	5	6,571	-	-	4	1,643
Ohio	8	24,467	-	-	-	-
Hooven	1	4,015	-	-	-	-
Toledo	4	16,973	-	-	-	-
Tennessee	1	21	-	-	-	-

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* Includes plants under construction and reconstruction.

Analysis 8.5 Location of Refineries in Southwestern Districts

DISTRICT	OPERATING REFINERIES NUMBER OF REFIN-ERIES	1932 ANNUAL CAPACITY (000) BARRELS	1932 PRODUCTION RUNS TO STILLS (000) BARRELS	CAPA-CITY UTI-LIZED	SHUT DOWN PLANTS* NUMBER OF REFIN-ERIES	1932 ANNUAL CAPACITY (000) BARRELS
OKLAHOMA, KANSAS, MISSOURI, ETC.	63	164,131	87,170	53%	21	23,220
Iowa	-	-	-	-	1	548
Kansas	16	54,890	-	-	4	4,791
Argentine	1	4,015	-	-	-	-
Arkansas City	2	11,680	-	-	-	-
Augusta	1	5,840	-	-	-	-
Coffeyville	2	6,388	-	-	-	-
El Dorado	2	10,038	-	-	-	-
Kansas City	1	5,475	-	-	-	-
Mc Pherson	-	-	-	-	2	4,015
Wichita	3	5,110	-	-	-	-
Missouri	2	8,030	-	-	1	548
Sugar Creek	1	6,570	-	-	-	-
Nebraska	1	22	-	-	-	-
Oklahoma	44	101,189	-	-	15	17,333
Allen	1	2,190	-	-	1	2,920
Ardmore	2	2,555	-	-	1	1,460
Blackwell	2	3,541	-	-	-	-
Bristow	2	2,373	-	-	1	1,825
Cushing	2	5,293	-	-	2	2,920
Drumright	1	6,570	-	-	-	-
Enid	2	7,665	-	-	-	-
Muskogee	1	3,285	-	-	-	-
Oklahoma City	11	6,333	-	-	2	1,825
Okmulgee	3	7,665	-	-	-	-
Ponca City	2	15,330	-	-	-	-
West Tulsa	2	19,710	-	-	1	913
TEXAS INLAND	89	99,132	49,435	50%	44	46,165
Big Spring	2	4,198	-	-	2	4,928
Bodie	-	-	-	-	1	3,650
Borger	1	10,950	-	-	1	2,555
Colorado	1	3,650	-	-	-	-
Electra	1	1,825	-	-	1	1,825
El Paso	3	7,483	-	-	-	-
Ft. Worth	6	9,198	-	-	1	949
Henderson	1	1,278	-	-	2	4,928
Mc Camey	-	-	-	-	1	5,475
Overton	5	4,106	-	-	-	-
Pampa	1	2,190	-	-	1	1,095
San Antonio	3	3,103	-	-	-	-
Tyler	1	5,475	-	-	-	-
West Dallas	2	7,300	-	-	-	-
Wichita Falls	3	4,198	-	-	4	6,205
TEXAS GULF COAST	14	181,588	147,143	81%	4	6,753
Baytown	1	29,200	-	-	-	-
Beaumont	1	25,550	-	-	-	-
Houston	3	29,200	-	-	1	1,095
Ingleside	1	4,380	-	-	-	-
Magpetco	-	-	-	-	1	3,650
Nederland	1	10,950	-	-	-	-
Pasadena	1	3,833	-	-	-	-
Port Arthur	2	67,525	-	-	-	-
Port Neches	1	7,300	-	-	-	-
Texas City	1	1,825	-	-	1	1,825
LOUISIANA GULF COAST	4	48,180	35,853	74%	3	11,680
Alabama	-	-	-	-	1	2,190
Louisiana	4	48,180	-	-	2	9,490
Baton Rouge	1	32,850	-	-	-	-
Destrehan	1	7,300	-	-	-	-
Meraux	-	-	-	-	1	8,030
Norco	1	5,840	-	-	-	-
ARKANSAS AND LOUISIANA INLAND	15	29.037	18,297	63%	4	6,169
Arkansas	8	15,140	-	-	1	1,205
El Dorado	4	10,950	-	-	-	-
Louisiana	7	13,889	-	-	3	4,964
Cedar Grove	1	274	-	-	1	3,650
Gas Center	1	5,475	-	-	-	-
Shreveport	3	6,205	-	-	-	-

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* Includes plants under construction and reconstruction.

Analysis 8.6 Location of Refineries in Pacific Districts

DISTRICT	OPERATING REFINERIES NUMBER OF REFIN-ERIES	1932 ANNUAL CAPACITY (000) BARRELS	1932 PRODUCTION RUNS TO STILLS (000) BARRELS	CAPA-CITY UTI-LIZED	SHUT DOWN PLANTS* NUMBER OF REFIN-ERIES	1932 ANNUAL CAPACITY (000) BARRELS
ROCKY MOUNTAIN	39	29,380	13,934	47%	35	8,738
Colorado	5	2,092	-	-	5	544
Montana	12	6,333	-	-	12	5,094
New Mexico	8	2,173	-	-	2	109
South Dakota	-	-	-	-	1	15
Utah	2	2,555	-	-	3	493
Wyoming	12	16,277	-	-	12	2,533
Casper	3	9,344	-	-	1	37
CALIFORNIA	44	285,846	164,737	58%	17	42,927
California	44	285,846	-	-	17	42,927
Associated	1	18,250	-	-	-	-
Avila	-	-	-	-	1	3,650
Bakersfield	2	10,038	-	-	1	730
El Segundo	1	36,500	-	-	-	-
Hynes	1	2,373	-	-	2	22,265
Lebec	1	4,380	-	-	-	-
Long Beach	5	12,593	-	-	1	365
Los Angeles	5	38,213	-	-	3	4,563
Martinez	1	13,323	-	-	-	-
Oleum	1	10,950	-	-	-	-
Richmond	1	36,500	-	-	-	-
Signal Hill	2	4,380	-	-	-	-
Torrance	1	12,775	-	-	-	-
Vernon	-	-	-	-	1	3,650
Vinvale	-	-	-	-	1	3,650
Watson	2	24,820	-	-	-	-
Wilmington	3	45,625	-	-	-	-

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* Includes plants under construction and reconstruction.

Analysis 9.1 Distribution of Railway Commodities Terminated Among Classes of Terminal Districts-1932*

COMMODITY GROUP	TOTAL UNITED STATES (000)	AGGREGATE CARS TERMINATED BY CLASSES OF TERMINAL DISTRICTS			PERCENTAGE OF ALL COMMODITIES UNITED STATES	PERCENTAGE OF TOTAL CARS OF EACH COMMODITY TERMINATED IN UNITED STATES		
		METROPOLITAN DISTRICTS (000)	MAJOR DISTRICTS (000)	MINOR DISTRICTS (000)		METROPOLITAN DISTRICTS	MAJOR DISTRICTS	MINOR DISTRICTS
ALL COMMODITIES	18,285	8,390	4,821	5,074	100%	46%	26%	28%
I ROUGH MATERIAL	837	178	147	511	5	21	18	61
Sand, Stone and Gravel	837	178	147	511	5	21	18	61
II RAW MATERIAL	9,585	4,745	2,618	2,223	52%	49%	27%	23%
Bulk Grain and Beets	990	454	280	256	5	46	28	26
Perishables	881	669	139	73	5	76	16	8
Live Animals	982	639	166	176	5	65	17	18
Coal and Coke	5,165	2,515	1,447	1,203	28	49	28	23
Ore	456	144	217	95	2	32	48	21
Sulphur & Sulphuric Acid	106	20	46	40	#	19	43	38
Forest Products	1,005	302	323	380	6	30	32	38
III SEMIPROCESSED MATERIAL	716	357	209	150	4%	50%	29%	21%
Cotton, Hay and Tobacco	404	159	137	108	2	39	34	27
Paper and Products	312	197	72	43	2	63	23	14
IV NECESSARIES	2,373	1,162	559	652	13%	49%	24%	27%
Cereals	744	283	198	264	4	38	27	35
Miscellaneous Farm Products	451	174	85	192	2	39	19	43
Edible Animal Products	453	337	87	28	2	74	19	6
Oils - Vegetable & Animal	184	82	50	51	1	45	27	28
Manufactured Food	490	263	127	101	3	54	26	20
Textiles and Leather	50	22	13	15	#	44	26	30
V AUXILIARIES	3,716	1,385	1,018	1,313	20%	37%	27%	35%
Petroleum and Products	1,816	526	538	752	10	29	30	41
Building Materials	478	156	109	214	3	33	23	45
Chemicals	43	21	14	9	#	48	31	21
Miscellaneous	1,378	682	357	338	8	50	26	25
VI ACCESSORIES	1,058	564	269	225	6%	53%	25%	21%
Iron and Steel	576	277	173	126	3	48	30	22
Other Metals	26	14	7	5	#	53	28	20
Appliances	348	222	65	62	2	64	19	18
Glass and Tile	108	52	24	32	#	48	23	30

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* Carload only.
# Less than ½ percent.

Analysis 9.2 Distribution by Rate Territory of Railway Commodities Among Metropolitan and Major Terminal Districts - Aggregate Cars Terminated - 1932

COMMODITY GROUP	TERMINAL DISTRICT								
	NEW ENGLAND (000)	TRUNK LINE (000)	CENTRAL (000)	POCAHONTAS (000)	SOUTHEASTERN (000)	WESTERN TRUNK LINE (000)	SOUTHWESTERN (000)	PACIFIC NORTHWEST (000)	PACIFIC SOUTHWEST (000)
METROPOLITAN TERMINAL DISTRICTS									
ALL COMMODITIES	421	2,444	2,624	384	566	1,188	297	169	295
I ROUGH MATERIAL*	5	34	57	3	22	23	15	3	16
Sand, Stone & Gravel	5	34	57	3	22	23	15	3	16
II RAW MATERIAL*	160	1,322	1,618	314	244	772	86	118	112
Bulk Grain & Beets	3	40	136	2	19	197	23	27	7
Perishables	65	257	169	4	34	56	23	26	36
Live Animals	20	128	215	2	12	200	19	11	33
Coal & Coke	59	789	999	297	107	234	4	12	14
Ores	2	49	21	#	10	48	3	#	10
Sulphur & Sulphuric Acid	1	3	5	#	7	2	1	-	1
Forest Products	10	55	73	8	56	34	13	42	12
III SEMIPROCESSED MATERIAL*	24	88	67	22	56	42	45	5	7
Cotton, Hay & Tobacco	6	16	9	19	43	20	40	4	2
Paper & Products	18	72	58	3	13	23	5	1	5
IV NECESSARIES*	95	369	279	21	122	115	66	21	74
Cereals	19	83	68	5	37	30	13	14	13
Miscellaneous Farm Products	6	44	49	6	20	17	9	2	22
Edible Animal Products	50	154	72	5	22	17	7	2	8
Oils-Vegetable & Animal	3	11	13	2	22	6	22	#	4
Manufactured Food	14	72	71	3	18	41	13	3	26
Textiles & Leather	4	5	6	1	2	3	1	#	#
V AUXILIARIES*	103	406	433	17	92	191	68	15	61
Petroleum & Products	28	100	183	3	44	97	42	5	24
Building Materials	14	62	35	2	8	15	5	5	9
Chemicals	1	7	6	#	3	3	1	#	1
Miscellaneous	60	237	209	11	37	76	20	5	27
VI ACCESSORIES*	35	225	170	8	31	46	18	7	24
Iron & Steel	15	106	112	3	14	16	5	1	5
Other Metals	1	3	4	#	#	2	1	1	1
Appliances	15	90	41	4	15	23	11	5	17
Glass & Tile	4	25	12	1	2	5	1	#	2
MAJOR TERMINAL DISTRICTS									
ALL COMMODITIES	281	1,075	1,204	264	537	732	424	136	168
I ROUGH MATERIAL*	1	22	44	9	17	21	21	3	8
Sand, Stone & Gravel	1	22	44	9	17	21	21	3	8
II RAW MATERIAL*	110	659	722	131	215	462	134	87	98
Bulk Grain & Beets	7	16	51	5	14	115	45	18	10
Perishables	9	25	23	11	15	25	17	6	7
Live Animals	6	13	15	3	2	112	6	3	7
Coal & Coke	62	533	490	83	84	146	13	20	15
Ores	2	30	89	11	6	28	3	5	43
Sulphur & Sulphuric Acid	1	2	3	2	21	1	16	#	1
Forest Products	24	40	52	16	72	35	34	35	15
III SEMIPROCESSED MATERIAL*	13	20	29	9	56	13	63	2	3
Cotton, Hay & Tobacco	4	5	7	5	50	6	58	1	1
Paper & Products	9	15	23	4	6	7	5	1	2
IV NECESSARIES*	47	93	78	35	120	73	79	13	22
Cereals	20	33	28	11	37	25	34	4	6
Miscellaneous Farm Products	4	12	13	8	17	9	10	4	7
Edible Animal Products	12	22	12	8	18	8	6	1	1
Oils-Vegetable & Animal	1	3	3	#	28	3	11	#	1
Manufactured Food	7	21	21	7	16	27	16	4	7
Textiles & Leather	3	2	1	1	4	#	1	#	#
V AUXILIARIES*	92	190	258	59	106	143	110	28	32
Petroleum & Products	41	78	133	20	58	91	80	18	20
Building Materials	7	25	24	7	12	17	11	3	3
Chemicals	1	2	3	#	6	1	#	#	#
Miscellaneous	44	86	98	32	29	34	19	7	9
VI ACCESSORIES*	16	31	73	21	23	19	17	4	5
Iron & Steel	6	66	56	16	11	6	8	#	3
Other Metals	2	2	1	#	#	#	1	#	#
Appliances	7	17	11	3	9	8	6	2	2
Glass & Tile	2	6	6	2	3	4	2	#	#

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.
# Less than 500 cars.

Analysis 9.3 Distribution of Railway Commodities Among Minor Terminal Districts - Aggregate Cars Terminated - 1932

COMMODITY GROUP	TERMINAL DISTRICT NEW ENG-LAND (000)	TRUNK LINE (000)	CEN-TRAL (000)	POCA-HON-TAS (000)	SOUTH-EAST-ERN (000)	WEST-ERN TRUNK LINE (000)	SOUTH-WEST-ERN (000)	PAC-FIC NORTH WEST (000)	PAC-FIC SOUTH-WEST (000)
ALL COMMODITIES	329	1,047	904	133	598	989	607	196	270
I ROUGH MATERIAL	8	59	105	13	75	113	105	15	18
Sand, Stone & Gravel	8	59	105	13	75	113	105	15	18
II RAW MATERIAL*	138	505	429	49	204	493	158	108	138
Bulk Grain & Beets	9	28	28	2	7	92	27	29	34
Perishables	14	11	12	3	3	10	8	5	7
Live Animals	3	13	29	2	4	76	23	8	19
Coal & Coke	83	367	301	26	100	251	35	22	17
Ores	4	29	16	4	9	4	11	1	16
Sulphur & Sulphuric	1	3	1	1	30	1	2	#	1
Forest Products	23	55	41	10	50	59	52	43	45
III SEMIPROCESSED MATERIAL*	17	27	14	4	35	13	28	8	4
Cotton, Hay & Tobacco	10	13	3	3	32	10	26	7	4
Paper & Products	8	14	11	1	3	3	2	1	1
IV NECESSARIES*	59	139	58	23	138	77	117	19	21
Cereals	28	52	24	8	36	41	59	10	7
Miscellaneous Farm Products	13	55	15	12	59	9	23	4	3
Edible Animal Products	5	11	3	1	3	3	2	#	1
Oils-Vegetable & Animal	2	4	3	#	19	6	16	1	1
Manufactured Food	7	16	13	2	16	18	15	4	9
Textiles & Leather	5	2	1	#	4	#	2	#	#
V AUXILIARIES*	88	236	254	37	128	271	175	41	82
Petroleum & Products	35	86	143	18	81	194	124	30	42
Building Materials	13	49	39	6	22	42	29	3	10
Chemicals	1	3	1	1	1	1	#	#	1
Miscellaneous	40	97	71	13	25	34	22	7	30
VI ACCESSORIES*	18	80	44	8	19	22	23	4	6
Iron & Steel	6	50	33	5	8	7	12	2	3
Other Metals	1	1	1	#	#	#	#	#	1
Appliances	7	19	5	2	7	9	9	2	2
Glass & Tile	5	10	5	1	4	5	2	1	#

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.
# Less than 500 cars.

Analysis 9.4 Distribution of Railway Commodities New England and Trunk Line Metropolitan Districts - Aggregate Cars Terminated - 1932

COMMODITY GROUP	TERMINAL DISTRICT BOS-TON (000)	FALL RIVER (000)	LOW-ELL (000)	LYNN (000)	NEW BED-FORD (000)	SPR-ING-FIELD (000)	WOR-CES-TER (000)	BRI-DGE-PORT (000)	HART-FORD (000)	NEW HAVEN (000)	PRO-VI-DENCE (000)	PAT-ER-SON (000)	TREN-TON (000)	WIL MING-TON (000)
ALL COMMODITIES	209.3	6.6	7.9	6.0	5.8	38.0	36.8	15.3	28.9	23.3	43.2	19.9	22.9	20.8
I ROUGH MATERIAL*	2.5	#	-	#	-	.3	1.2	.1	.3	.4	.4	#	.2	.4
Sand, Stone and Gravel	2.5	#	-	#	-	.3	1.2	.1	.3	.4	.4	#	.2	.4
II RAW MATERIAL*	79.5	1.3	3.9	1.7	1.7	15.6	14.6	6.5	13.0	8.9	13.1	11.1	12.6	11.7
Bulk Grain and Beets	1.4	.1	#	.1	.1	.1	.4	#	.2	.2	.5	.1	#	-
Perishables	42.4	.4	.3	.2	.8	3.8	1.4	2.1	3.8	2.6	7.0	1.3	.5	.4
Live Animals	16.9	-	.6	-	-	1.0	.2	#	.1	.8	.6	.3	.4	1.4
Coal and Coke	13.4	.5	2.4	.9	.5	10.2	11.6	3.6	8.2	4.0	3.5	8.9	10.8	6.4
Ores	1.3	-	-	.1	-	-	.1	.1	.1	.2	.3	-	.1	2.5
Sulphur and Sulphuric Acid	.1	-	.3	-	-	#	.1	-	-	-	#	-	#	#
Forest Products	4.0	.3	.3	.4	.2	.6	.9	.7	.7	1.1	1.1	.5	.8	1.1
III SEMIPROCESSED MATERIAL*	11.8	.8	.7	.3	.6	2.3	1.1	.6	1.5	1.1	2.8	1.0	.4	.4
Cotton, Hay and Tobacco	2.0	.6	.3	#	.5	.3	.3	.1	.3	.5	1.2	.6	.1	-
Paper and Products	9.8	.3	.3	.2	.1	2.0	.9	.5	1.2	.7	1.6	.4	.3	.4
IV NECESSARIES*	48.0	2.4	1.4	1.8	1.7	8.9	4.7	3.1	6.3	5.9	10.9	4.4	1.9	2.5
Cereals	7.8	.8	.5	.3	.7	1.8	1.3	.6	1.7	1.2	2.7	.7	.4	.4
Miscellaneous Farm Products	2.2	.2	.1	#	.2	.2	.2	.2	.2	.8	1.3	#	.1	.4
Edible Animal Products	25.4	1.1	.7	.8	.5	5.6	2.7	1.9	3.5	3.1	4.4	3.1	1.2	.9
Oils-Vegetable and Animal	2.3	#	#	-	-	-	.1	-	#	#	#	.1	#	#
Manufactured Food	7.4	.2	.1	.5	.4	1.2	.3	.4	.8	.7	1.9	.5	.1	.2
Textiles and Leather	3.0	.1	-	.1	-	#	#	-	#	#	.7	-	#	.6
V AUXILIARIES*	52.5	1.5	1.7	1.6	1.1	8.1	9.6	3.3	5.8	5.3	12.3	2.8	5.7	4.2
Petroleum and Products	8.7	.6	.9	.6	.3	5.0	5.7	.4	1.9	.7	2.8	1.3	2.8	.8
Building Materials	6.4	.3	.2	.5	.1	.6	1.7	.5	.8	1.1	2.0	.4	.6	.6
Chemicals	.4	#	#	-	-	#	-	.1	#	-	#	.2	.1	.1
Miscellaneous	37.0	.6	.6	.6	.6	2.4	2.1	2.2	3.0	3.5	7.5	.8	2.2	2.8
VI ACCESSORIES*	14.9	.6	.2	.7	.6	2.9	5.6	1.7	2.1	1.7	3.7	.6	2.2	1.5
Iron and Steel	5.3	.1	.1	.4	.1	1.3	4.7	.6	.6	.7	1.5	.2	1.4	.9
Other Metals	.2	-	-	-	.4	#	#	.3	#	#	.1	-	.1	#
Appliances	7.4	.4	.1	.3	.2	1.4	.7	.6	1.3	.7	1.6	.3	.5	.4
Glass and Tile	2.0	.1	#	-	#	.2	.2	.2	.2	.2	.6	.1	.2	.2

COMMODITY GROUP	AL-BANY (000)	BUFF-ALO (000)	NEW YORK (000)	RO-CHES-TER (000)	SY-RA-CUSE (000)	UTICA (000)	BALT-IMORE (000)	ERIE (000)	PHIL-ADEL-PHIA (000)	PITTS-BURGH (000)	READ-ING (000)	SCRAN-TON (000)	WASH-ING-TON (000)
ALL COMMODITIES	39.2	164.3	1,067.9	66.9	52.6	22.1	170.1	49.6	378.9	192.5	17.6	84.0	74.6
I ROUGH MATERIAL*	.6	.6	5.6	1.1	12.4	.7	2.6	.6	1.8	3.4	.5	1.3	2.7
Sand, Stone and Gravel	.6	.6	5.6	1.1	12.4	.7	2.6	.6	1.8	3.4	.5	1.3	2.7
II RAW MATERIAL*	17.5	102.9	554.7	44.4	19.3	13.6	86.6	34.8	202.7	101.9	7.9	66.8	33.1
Bulk Grain and Beets	1.0	18.9	7.9	1.2	.8	.3	4.3	.2	4.1	.4	.5	.2	.2
Perishables	5.1	7.8	137.0	4.7	4.1	1.2	14.6	.4	38.3	31.7	.4	3.3	6.2
Live Animals	.6	16.2	70.7	1.5	.4	1.1	9.5	.5	14.5	10.1	.8	.1	.3
Coal and Coke	8.9	53.5	312.8	35.7	12.2	10.0	45.8	32.2	131.0	27.9	5.7	62.4	25.1
Ores	.2	2.1	4.0	-	.4	.2	6.8	.1	4.9	27.6	#	.1	-
Sulphur and Sulphuric Acid	.1	.8	1.0	.1	#	#	.8	#	.4	.2	#	-	-
Forest Products	1.7	3.7	21.1	1.3	1.4	.8	4.8	1.4	9.5	4.0	.5	.8	1.3
III SEMIPROCESSED MATERIAL*	1.2	3.0	47.5	1.7	1.2	.8	3.9	.8	16.2	6.2	.6	.7	2.9
Cotton, Hay and Tobacco	#	.4	11.3	-	#	.1	.4	-	1.6	.9	.1	#	.1
Paper and Products	1.1	2.6	36.2	1.7	1.1	.7	3.5	.8	14.7	5.2	.4	.6	2.8
IV NECESSARIES*	6.5	26.2	180.5	6.6	7.7	3.0	21.9	1.8	51.7	35.0	1.4	8.3	9.5
Cereals	2.2	9.6	38.5	1.6	1.6	.7	5.2	.8	10.6	7.7	.1	1.3	1.6
Miscellaneous Farm Products	.2	3.1	23.6	.4	.6	.1	4.7	.1	6.5	3.3	-	.1	1.0
Edible Animal Products	2.4	4.3	87.1	2.5	3.2	1.2	6.4	.6	22.3	10.6	.6	2.6	4.5
Oils-Vegetable and Animal	-	2.5	4.7	.1	#	.1	1.0	-	1.5	.4	#	#	.1
Manufactured Food	1.5	5.7	24.4	2.0	2.1	.8	4.5	.3	10.4	12.9	.7	4.2	2.1
Textiles and Leather	.1	1.0	2.1	-	.1	#	.1	-	.5	.1	-	-	.2
V AUXILIARIES*	9.7	21.0	168.4	10.1	8.9	2.8	33.9	9.4	77.4	25.3	5.1	5.8	15.4
Petroleum and Products	2.4	7.7	16.4	4.5	2.6	1.2	11.4	2.9	24.0	7.0	2.8	3.2	9.0
Building Materials	1.2	2.8	33.0	1.5	1.3	.3	5.0	1.0	5.3	4.8	.3	.7	3.6
Chemicals	.1	1.1	2.1	.3	#	.1	1.0	.1	1.5	.2	#	-	#
Miscellaneous	6.1	9.4	116.9	3.8	5.0	1.2	16.4	5.5	46.6	13.4	1.9	1.9	2.8
VI ACCESSORIES*	3.7	10.6	111.3	2.9	3.1	1.3	21.3	2.1	29.0	20.8	2.2	1.1	10.9
Iron and Steel	2.4	4.7	40.9	1.3	1.5	1.0	14.0	1.6	13.6	15.5	1.2	.5	5.6
Other Metals	#	.3	1.6	.2	-	#	.4	.1	.6	.2	#	#	.1
Appliances	1.2	4.0	54.5	.5	1.3	.3	5.1	.4	12.4	4.2	.4	.4	4.2
Glass and Tile	.1	1.7	14.3	.9	.3	-	1.8	.1	2.4	1.0	.5	.1	1.0

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.
# Less than 50 cars.

Analysis 9.5 Distribution of Railway Commodities Among Central Metropolitan Districts
Aggregate Cars Terminated - 1932

COMMODITY GROUPS	TERMINAL DISTRICT AKRON (000)	CANTON (000)	CINCINNATI (000)	CLEVELAND (000)	COLUMBUS (000)	DAYTON (000)	TOLEDO (000)	YOUNGSTOWN (000)	MILWAUKEE (000)
ALL COMMODITIES	69.8	19.9	143.8	245.5	67.6	52.1	275.5	65.7	102.9
I ROUGH MATERIAL	4.1	.2	7.5	11.6	.5	.3	2.4	2.1	2.8
Sand, Stone and Gravel	4.1	.2	7.5	11.6	.5	.3	2.4	2.1	2.8
II RAW MATERIAL*	42.1	7.7	73.7	153.3	35.2	26.6	238.9	41.9	43.9
Bulk Grain and Beets	5.6	.1	4.7	.9	.8	.1	12.6	.2	12.1
Perishables	1.5	.8	12.8	17.5	4.9	2.7	3.5	2.5	8.4
Live Animals	-	.4	11.4	9.7	4.9	1.1	.7	.5	12.2
Coal and Coke	27.3	5.7	35.1	116.7	20.8	20.6	219.1	35.1	5.2
Ores	1.5	.1	1.6	3.1	1.9	.1	.7	2.8	.1
Sulphur and Sulphuric Acid	.2	.2	1.1	.2	.4	#	.1	.2	.2
Forest Products	5.9	.4	7.1	5.2	1.5	2.2	2.1	.7	5.8
III SEMIPROCESSED MATERIAL*	1.5	.4	5.7	4.4	1.9	2.2	1.3	.2	3.3
Cotton, Hay and Tobacco	.1	-	.5	.4	-	-	.2	-	.4
Paper and Products	1.4	.4	5.3	4.0	1.9	2.2	1.1	.2	2.9
IV NECESSARIES*	5.2	1.5	19.0	22.4	10.5	4.7	12.8	4.3	18.8
Cereals	1.4	.3	3.5	6.3	2.7	1.1	4.9	.9	7.1
Miscellaneous Farm Products	.4	.2	5.0	3.5	1.9	.8	3.6	.1	4.3
Edible Animal Products	1.1	.5	1.2	5.4	1.3	.5	1.6	1.4	2.4
Oils-Vegetable and Animal	.2	-	3.6	.4	.7	.3	.3	#	.7
Manufactured Food	.8	.5	5.3	6.6	3.4	2.0	2.2	1.8	3.9
Textiles and Leather	1.3	-	.4	.3	.5	.1	.1	#	.4
V AUXILIARIES*	14.6	4.6	29.9	38.1	16.2	14.8	14.9	9.3	27.3
Petroleum and Products	5.4	3.3	10.5	12.3	8.2	6.3	6.5	4.3	13.2
Building Materials	1.0	.1	4.0	2.9	1.3	.8	1.1	1.2	2.0
Chemicals	.1	#	1.5	.6	.1	#	.2	#	.6
Miscellaneous	8.1	1.1	13.9	22.3	6.6	7.8	7.1	3.8	11.4
VI ACCESSORIES	2.3	5.6	7.9	15.6	3.3	3.5	5.3	7.9	6.9
Iron and Steel	1.6	5.3	3.4	11.2	1.8	2.7	3.3	7.7	5.0
Other Metals	.1	.1	.4	.9	.1	#	.1	-	#
Appliances	.4	.2	3.4	2.4	1.2	.6	1.7	#	1.3
Glass and Tile	.2	#	.7	1.1	.2	.2	.2	.1	.5

COMMODITY GROUPS	DETROIT (000)	EVANSVILLE (000)	FLINT (000)	FORT WAYNE (000)	SOUTH BEND (000)	GRAND RAPIDS (000)	INDIANAPOLIS (000)	CHICAGO (000)	PEORIA (000)
ALL COMMODITIES	294.4	21.4	29.6	20.2	21.4	33.6	126.7	991.2	42.8
I ROUGH MATERIAL	7.0	1.1	.1	.2	.3	#	2.0	14.1	.4
Sand, Stone and Gravel	7.0	1.1	.1	.2	.3	#	2.0	14.1	.4
II RAW MATERIAL*	145.9	9.8	15.0	12.1	12.4	19.7	85.7	634.3	19.8
Bulk Grain and Beets	3.1	2.1	-	.5	.2	.7	11.2	75.4	5.8
Perishables	20.7	1.5	1.4	1.6	.8	3.2	7.2	76.0	1.7
Live Animals	12.1	.5	.1	.3	-	.3	5.1	154.7	1.0
Coal and Coke	99.8	3.8	12.8	9.1	10.9	14.1	57.7	295.2	10.1
Ores	2.7	-	-	.1	-	.1	.4	5.7	.1
Sulphur and Sulphuric Acid	.2	#	-	#	-	#	.6	1.6	#
Forest Products	7.3	1.9	.7	.5	.5	1.4	3.4	25.7	1.1
III SEMIPROCESSED MATERIAL*	6.2	1.0	.5	.3	.3	.8	2.7	34.0	.4
Cotton, Hay and Tobacco	.8	.6	.1	#	-	.1	.2	6.0	#
Paper and Products	5.4	.4	.4	.3	.3	.7	2.5	28.0	.4
IV NECESSARIES*	32.2	3.5	1.9	2.4	.8	4.0	8.1	119.3	7.9
Cereals	6.9	1.9	.8	1.0	.2	1.1	2.1	23.9	1.7
Miscellaneous Farm Products	3.5	.5	-	.4	-	1.2	1.9	17.7	4.0
Edible Animal Products	12.1	.3	.6	.3	.2	.8	.7	41.5	.6
Oils-Vegetable and Animal	.4	#	#	#	#	-	.1	5.6	.2
Manufactured Food	8.7	.6	.5	.6	.4	.9	2.9	28.8	1.4
Textiles and Leather	.6	.1	#	#	#	.1	.4	1.7	#
V AUXILIARIES*	65.3	4.2	5.1	3.9	4.6	8.0	23.8	138.5	9.9
Petroleum and Products	39.0	2.1	3.2	2.3	3.4	4.8	14.3	40.2	3.3
Building Materials	3.4	.4	.9	.5	.5	.8	2.3	10.3	1.9
Chemicals	.7	#	#	#	#	#	.2	1.6	.2
Miscellaneous	22.2	1.8	1.0	1.1	.7	2.3	7.0	86.4	4.4
VI ACCESSORIES*	37.8	1.7	7.0	1.3	3.0	1.1	4.5	51.1	4.4
Iron and Steel	21.9	1.2	5.8	.9	1.3	.9	2.3	33.4	2.7
Other Metals	.5	#	-	.1	-	#	.2	1.8	-
Appliances	12.7	.4	1.0	.2	1.7	1.0	1.6	10.9	1.5
Glass and Tile	2.7	.1	.3	.1	#	.1	.4	5.0	.2

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# Less than 50 cars.

Analysis 9.6 Distribution of Railway Commodities Southern Metropolitan Districts
Aggregate Cars Terminated - 1932

COMMODITY GROUPS	TERMINAL DISTRICT NORFOLK (000)	RICHMOND (000)	LOUISVILLE (000)	CHATTANOOGA (000)	KNOXVILLE (000)	MEMPHIS (000)	NASHVILLE (000)
ALL COMMODITIES	340.5	43.7	76.1	34.5	26.6	80.5	47.1
I ROUGH MATERIAL	2.3	.3	.7	.5	1.6	4.1	1.1
Sand, Stone and Gravel	2.3	.3	.7	.5	1.6	4.1	1.1
II RAW MATERIAL*	296.1	17.4	39.4	16.8	15.5	33.8	26.2
Bulk Grain and Beets	1.2	.7	5.1	1.4	1.5	2.2	4.1
Perishables	1.2	2.7	4.7	1.3	.9	3.8	3.1
Live Animals	.4	1.5	2.1	.3	.3	2.5	.4
Coal and Coke	286.8	10.3	22.2	11.0	10.0	15.1	14.8
Ores	.2	.3	.2	.9	.2	.3	-
Sulphur and Sulphuric Acid	.2	.1	.1	.2	.3	#	1.3
Forest Products	6.1	1.8	5.0	1.6	2.5	9.8	2.6
III SEMIPROCESSED MATERIAL*	14.5	7.8	10.2	1.8	1.0	9.8	1.7
Cotton, Hay and Tobacco	13.7	5.4	6.5	.8	.6	8.2	.5
Paper and Products	.7	2.4	3.7	1.1	.4	1.5	1.2
IV NECESSARIES*	12.9	8.1	9.5	7.5	3.7	19.9	10.7
Cereals	2.2	2.4	2.2	1.9	1.1	4.1	5.7
Miscellaneous Farm Products	4.3	1.5	2.1	.5	1.0	2.7	1.6
Edible Animal Products	3.0	2.0	1.1	1.2	.5	3.4	.8
Oils-Vegetable and Animal	1.4	.5	1.0	2.1	.2	7.3	.7
Manufactured Food	1.5	1.7	3.0	1.6	.8	1.8	1.6
Textiles and Leather	.5	#	.1	.2	#	.7	.2
V AUXILIARIES*	9.5	7.2	12.2	6.2	3.6	8.8	5.8
Petroleum and Products	2.1	1.2	4.8	2.0	2.4	4.2	3.4
Building Materials	1.0	.9	1.3	.5	.5	.6	.5
Chemicals	.1	.2	.3	.1	#	.1	.1
Miscellaneous	6.3	4.8	5.8	3.6	.6	3.9	1.8
VI ACCESSORIES *	5.3	2.9	4.1	1.8	1.2	4.1	1.5
Iron and Steel	2.1	1.0	1.8	1.3	.6	1.3	.8
Other Metals	.1	.1	.1	.1	-	#	-
Appliances	2.9	1.3	1.5	.4	.5	2.3	.6
Glass and Tile	.2	.5	.7	#	.1	.5	.1

COMMODITY GROUPS	ATLANTA (000)	BIRMINGHAM (000)	JACKSONVILLE (000)	MIAMI (000)	TAMPA (000)	NEW ORLEANS (000)
ALL COMMODITIES	73.8	53.9	41.0	6.8	23.5	102.6
I ROUGH MATERIAL	2.9	1.0	3.1	#	3.9	2.6
Sand, Stone and Gravel	2.9	1.0	3.1	#	3.9	2.6
II RAW MATERIAL*	28.6	28.1	13.6	2.4	10.9	28.3
Bulk Grain and Beets	1.5	1.5	.3	-	.1	1.1
Perishables	5.1	4.6	2.5	1.2	1.4	5.5
Live Animals	2.5	1.1	.1	.1	.5	2.3
Coal and Coke	13.9	12.7	1.6	.3	.1	5.0
Ores	.7	6.2	.6	.1	.6	.1
Sulphur and Sulphuric Acid	.8	.6	.4	-	2.8	.1
Forest Products	4.2	1.5	8.2	.7	5.3	14.2
III SEMIPROCESSED MATERIAL*	6.3	1.1	.9	#	.4	22.5
Cotton, Hay and Tobacco	3.5	.8	.5	#	.4	21.1
Paper and Products	2.8	.3	.3	-	-	1.4
IV NECESSARIES*	14.0	11.3	10.1	1.5	4.7	29.0
Cereals	3.6	5.0	3.4	#	2.1	8.1
Miscellaneous Farm Products	2.0	1.2	3.4	.1	.4	5.0
Edible Animal Products	3.0	2.0	2.2	1.4	1.9	4.9
Oils-Vegetable and Animal	2.9	1.7	.7	-	.2	5.1
Manufactured Food	2.3	1.3	.5	#	.2	5.3
Textiles and Leather	.1	#	#	-	-	.6
V AUXILIARIES*	15.8	7.6	11.4	2.6	2.6	15.5
Petroleum and Products	7.2	4.0	3.6	1.3	1.7	10.0
Building Materials	1.5	.7	.7	.5	.2	1.4
Chemicals	.1	#	1.4	-	.1	.4
Miscellaneous	6.9	2.9	5.7	.8	.5	4.1
VI ACCESSORIES*	6.3	4.7	1.8	.3	1.0	4.6
Iron and Steel	1.9	3.9	.5	.2	.1	1.4
Other Metals	#	-	-	-	-	.2
Appliances	4.0	.8	1.2	.1	.9	2.6
Glass and Tile	.4	.1	.1	-	-	.4

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# Less than 50 cars.

SECTION 9. TERMINAL DISTRICT MARKETS

Analysis 9.7 Distribution of Railway Commodities Among Western Metropolitan Districts Aggregate Cars Terminated - 1932

COMMODITY GROUP	TERMINAL DISTRICT DENVER (000)	DES MOINES (000)	DULUTH (000)	KANSAS CITY (000)	MINNEAPOLIS (000)	OMAHA (000)	ST. PAUL (000)	ST. LOUIS (000)	DALLAS (000)	EL PASO (000)	FORT WORTH (000)	HOUSTON (000)	LITTLE ROCK (000)	OKLAHOMA CITY (000)
ALL COMMODITIES	65.0	46.4	95.4	258.4	156.8	123.5	105.5	270.0	49.1	15.0	55.3	91.1	20.3	26.0
I ROUGH MATERIALS*	.3	.3	.3	2.2	1.8	4.5	.5	10.3	2.3	#	7.6	2.1	.1	.9
Sand, Stone and Gravel	.3	.3	.3	2.2	1.8	4.5	.5	10.3	2.3	#	7.6	2.1	.1	.9
II RAW MATERIAL*	36.7	30.5	75.2	175.0	102.4	82.4	66.0	161.7	14.0	6.0	26.0	13.5	5.2	9.9
Bulk Grain and Beets	3.1	.6	43.4	49.4	54.3	8.9	2.0	19.6	4.1	.4	9.4	2.8	1.0	3.1
Perishables	4.2	3.0	1.9	11.2	7.6	3.9	3.6	16.8	5.5	.9	2.9	3.4	1.9	3.2
Live Animals	4.9	6.0	1.0	66.4	-	44.8	32.8	36.9	1.1	.8	12.2	2.1	#	2.4
Coal and Coke	22.3	7.5	6.1	41.0	33.0	22.3	24.0	65.7	.4	.7	.2	.5	.5	.2
Ores	.2	12.7	21.8	.4	#	.2	.6	12.1	.3	2.5	#	.2	-	#
Sulphur and Sulphuric Acid	.1	#	-	.6	#	#	#	1.4	#	#	-	.6	-	-
Forest Products	2.0	.7	1.0	5.9	7.5	2.3	3.0	9.2	2.5	.7	1.3	3.9	1.9	.9
III SEMIPROCESSED MATERIAL*	3.2	1.2	1.0	11.3	3.4	6.7	4.5	10.0	2.7	2.0	2.8	31.1	2.4	1.2
Cotton, Hay and Tobacco	1.5	.3	.4	6.0	.7	4.9	2.2	3.6	1.2	1.7	2.2	30.3	2.0	.7
Paper and Products	1.7	.9	.6	5.3	2.7	1.8	2.3	6.4	1.4	.2	.5	.8	.5	.5
IV NECESSARIES*	6.9	4.4	10.5	22.6	17.4	10.3	8.0	27.5	10.2	2.9	11.3	16.7	7.6	6.9
Cereals	1.2	1.9	5.4	5.1	3.6	2.4	1.7	6.8	1.5	.6	1.9	4.6	1.9	1.1
Miscellaneous Farm Products	1.0	.3	.2	3.0	2.3	1.1	.6	6.7	.8	.8	.4	3.0	.3	.5
Edible Animal Products	.3	.3	3.8	2.6	3.5	1.5	1.7	2.1	1.4	.6	.9	1.7	.7	.8
Oils-Vegetable and Animal	.6	.1	#	2.5	.4	.6	.2	1.3	3.6	.1	6.5	4.8	3.9	2.1
Manufactured Food	3.6	1.9	1.1	8.8	7.5	4.5	3.6	8.6	2.8	.7	1.5	2.2	.8	2.5
Textiles and Leather	.2.	-	-	.7	.2	.1	.1	2.1	.1	.1	.1	.4	-	#
V AUXILIARIES*	13.9	7.4	6.7	36.7	26.1	15.5	21.3	50.9	14.6	2.8	6.0	23.8	4.0	5.1
Petroleum and Products	8.9	4.6	4.3	20.3	11.4	8.7	11.4	21.8	5.1	1.8	3.7	19.1	2.7	2.5
Building Materials	.9	.1	.3	2.7	2.2	1.5	1.4	3.3	.6	.1	.7	.7	.4	1.0
Chemicals	.1	.1	#	.8	.3	.2	.2	.8	.2	-	.1	.1	#	.1
Miscellaneous	4.1	2.6	2.0	13.0	12.2	5.1	8.3	24.9	8.7	.9	1.5	3.8	.9	1.5
VI ACCESSORIES*	4.0	2.6	1.7	10.6	5.6	4.2	5.3	9.7	5.3	1.3	1.7	4.0	.9	2.0
Iron and Steel	1.1	.8	1.3	2.9	2.4	1.2	1.4	4.0	.8	.2	.4	1.3	.3	.9
Other Metals	.1	.1	-	.6	.1	.3	#	.3	#	.4	-	.1	-	.1
Appliances	2.5	1.6	.3	6.5	2.7	2.3	3.3	3.5	4.2	.6	1.1	2.2	.6	.9
Glass and Tile	.2	.1	.2	.6	.5	.4	.6	1.8	.3	.1	.1	.4	-	.2

COMMODITY GROUP	PORTLAND (000)	SEATTLE (000)	SPOKANE (000)	TACOMA (000)	LONG BEACH (000)	LOS ANGELES (000)	SALT LAKE CITY (000)	OAKLAND (000)	SAN DIEGO (000)	SAN FRANCISCO (000)	WICHITA (000)	DAVENPORT (000)	TULSA (000)	SAN ANTONIO (000)
ALL COMMODITIES	50.0	49.8	28.7	40.9	2.0	94.2	36.9	54.4	6.4	101.0	33.4	33.8	12.7	28.0
I ROUGH MATERIAL*	2.2	#	.6	.1	.2	6.6	.7	3.4	-	5.5	.5	2.3	.6	1.6
Sand, Stone and Gravel	2.2	#	.6	.1	.2	6.6	.7	3.4	-	5.5	.5	2.3	.6	1.6
II RAW MATERIAL*	32.6	31.3	20.1	34.3	.4	41.8	18.9	13.7	2.0	35.7	22.5	19.3	3.2	7.8
Bulk Grain and Beets	8.9	7.8	3.6	6.8	-	3.8	.9	.7	.4	1.7	11.7	3.8	.2	2.1
Perishables	12.2	11.5	.8	1.8	.2	14.3	.5	5.1	1.2	15.1	2.6	1.6	1.8	3.0
Live Animals	4.5	2.6	1.8	1.8	-	18.8	.7	1.9	.3	10.8	5.7	1.0	.4	#
Coal and Coke	1.8	5.3	3.8	1.6	-	.4	9.3	1.6	.1	2.5	1.4	11.0	.2	.8
Ores	-	#	.2	.1	-	.2	7.2	.8	#	1.6	#	.2	#	#
Sulphur and Sulphuric Acid	-	-	-	-	.1	.3	#	.2	-	.3	.1	#	.3	.1
Forest Products	5.3	4.0	9.9	22.3	.1	4.0	.2	3.5	#	3.9	1.0	1.7	.3	1.6
III SEMIPROCESSED MATERIAL*	.9	2.1	.1	2.2	#	2.2	.4	.8	#	3.4	.4	.6	.5	2.5
Cotton, Hay and Tobacco	.6	1.5	.1	2.1	-	.1	-	.2	#	1.6	-	#	-	1.6
Paper and Products	.3	.6	.1	#	#	2.0	.4	.6	#	1.8	.4	.5	.5	1.0
IV NECESSARIES*	9.1	7.8	2.2	2.4	.2	19.3	5.4	21.0	1.2	26.7	3.6	3.4	2.8	7.3
Cereals	6.7	5.1	.5	1.8	#	3.8	3.1	1.7	.5	4.0	.7	1.2	.5	1.2
Miscellaneous Farm Products	.5	.4	.5	.1	#	3.7	.3	8.7	.1	8.9	1.4	.6	.4	3.0
Edible Animal Products	.5	1.3	.3	.2	.1	3.4	.5	.8	.2	3.2	.2	.8	.4	.7
Oils-Vegetable and Animal	#	.1	#	.1	.1	2.2	.2	1.0	#	.9	.1	#	.7	.6
Manufactured Food	1.3	.8	.9	.2	.1	6.1	1.3	8.8	.3	9.7	1.2	.7	.8	1.6
Textiles and Leather	.1	#	-	-	#	.1	#	-	-	.1	#	.1	-	.2
V AUXILIARIES*	3.4	5.0	4.9	1.5	.3	16.4	10.1	10.0	2.9	21.3	6.0	6.6	5.0	6.5
Petroleum and Products	.6	.7	3.3	.1	.1	2.3	8.5	4.9	.6	7.8	2.2	3.6	3.6	3.1
Building Materials	.7	2.3	.5	1.0	.1	2.8	.6	2.2	.5	2.6	1.7	1.3	.5	1.1
Chemicals	.1	-	#	-	#	.4	#	.1	#	.3	.1	#	-	.2
Miscellaneous	2.0	1.9	1.0	.4	.2	10.9	1.0	2.8	1.8	10.5	2.0	.6	.9	2.2
VI ACCESSORIES*	1.7	3.6	.9	.5	.8	7.9	1.4	5.5	.3	8.3	.5	1.7	.5	2.3
Iron and Steel	.1	.2	.2	.1	#	1.2	.4	1.0	#	2.1	.1	.9	.4	.6
Other Metals	.1	.7	-	#	-	-	-	.5	-	.4	#	#	-	#
Appliances	1.5	2.6	.5	.4	.8	6.2	1.0	3.0	.3	5.6	.3	.4	.2	1.5
Glass and Tile	#	.1	.2	.1	#	.5	-	.9	#	.3	-	.4	#	.2

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

Less than 50 cars.

SECTION 10. TRADE AREA MARKETS

Analysis 10.1 Freight Traffic of United States, Districts, Territories, and Multiple Markets

DISTRICTS OR TERRITORIES	NUMBER OF COMMUNITIES ON RAILROADS	POPULATION TRADE AREAS RURAL (000)	URBAN (000)	TOTAL (000)	TRADE CENTERS (000)	TRADE AREAS SQUARE MILES	ON TRACK INDUSTRIES TRADE AREAS	TRADE CENTERS	CARS ORIGINATED TRADE AREAS (000)	TRADE CENTERS (000)	CARS TERMINATED TRADE AREAS (000)	TRADE CENTERS (000)
UNITED STATES	34,221	52,199	70,577	122,775	50,779	3,041,815	186,175	79,748	27,391	14,176	27,005	17,816
EASTERN	10,410	15,125	45,323	60,448	33,611	365,282	73,895	35,160	13,280	7,549	15,174	10,427
SOUTHERN	7,889	16,707	7,664	24,372	4,599	475,254	30,755	14,878	5.603	2,127	4,170	2,665
WESTERN	15,922	20,366	17,589	37,955	12,569	2,201,279	81,525	29,710	8,508	4,500	7,660	4,724
NEW ENGLAND	1,070	1,419	6,659	8,078	4,252	62,757	7,548	3,933	1.165	776	1,562	1,042
TRUNK LINE	4,087	6,451	22,450	28,901	17,038	117,266	25,019	10,286	5,977	2,978	6,676	4,338
CENTRAL	5,253	7,255	16,214	23,469	12,320	185,259	41,328	20,941	6,138	3,795	6,936	5,048
POCAHONTAS	1,057	2,869	1,320	4,190	81	84,845	5,021	2,301	2,128	475	1,088	748
SOUTHEASTERN	6,832	13,838	6,344	20,182	4,518	390,409	25,734	12,577	3,475	1,652	3,083	1,917
WESTERN TRUNK LINE	7,861	8,727	6,867	15,594	4,965	650,076	43,290	13,871	4,405	2,604	4,119	2,634
SOUTHWESTERN	4,441	7,607	4,219	11,826	2,838	566,536	18,720	7,211	2,167	1,056	1,891	1,063
PACIFIC NORTHWEST	1,543	1,853	1,740	3,593	1,390	453,062	9,546	4,306	791	381	655	427
PACIFIC SOUTHWEST	2,077	2,179	4,763	6,942	3,376	531,605	9,969	4,322	1,145	458	995	599
BOSTON (1)	97	46	2,146	2,192	781	1,321	1,486	786	295	240	411	301
NEW YORK CITY (2)	421	503	10,442	10,945	1,867	4,301	3,733	642	676	297	1,803	730
PHILADELPHIA (3)	286	335	2,683	3,018	1,951	3,298	2,296	1,171	434	298	669	465
PITTSBURGH (4)	229	407	1,470	1,878	670	2,311	1,623	598	973	346	526	394
DETROIT (5)	36	132	1,947	2,080	1,569	1,473	2,125	1,865	246	227	417	374
CLEVELAND (6)	63	116	1,278	1,394	900	2,069	1,737	1,340	331	196	526	371
CHICAGO (7)	272	197	4,306	4,504	3,376	3,022	5,456	4,548	1,321	1,195	1,748	1,403
ST. LOUIS (8)	450	584	1,251	1,836	822	16,100	3,191	1,255	625	278	625	389
LOS ANGELES (9)	145	342	2,018	2,360	1,238	5,298	1,626	871	141	86	177	148
SAN FRANCISCO (10)	157	208	1,318	1,526	634	6,378	1,906	761	288	86	263	92

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(1) Boston Multiple Market includes Arlington, Boston, Brookline, Cambridge, Chelsea, Framingham, Lynn, Melrose, Newton, Norwood, Quincy, Salem, Waltham.
(2) New York City Multiple Market includes Brooklyn, Bronx, Freeport, Manhattan, Oyster Bay, Queens, Staten Island, Yonkers, Elizabeth, Hackensack, Jersey City, Newark, New Brunswick, Paterson, Stamford.
(3) Philadelphia Multiple Market includes Norristown, Philadelphia, West Philadelphia, Camden.
(4) Pittsburgh Multiple Market includes Aliquippa, Beaver Falls, Braddock, Greensburg, McKeesport, Natrona, Pittsburgh.
(5) Detroit Multiple Market includes Dearborn, Detroit, Mt. Clements, Royal Oak.
(6) Cleveland Multiple Market includes Cleveland, Euclid, Lorain, Painesville.
(7) Chicago Multiple Market includes Chicago, Evanston, Oak Park, East Chicago.
(8) St. Louis Multiple Market includes St. Louis, Webster Grove, Alton, East St. Louis.
(9) Los Angeles Multiple Market includes Long Beach, Los Angeles, Pasadena, Santa Ana.
(10) San Francisco Multiple Market includes Oakland, San Francisco, San Jose, Vallejo.

SECTION 10. TRADE AREA MARKETS

Analysis 10.2 Freight Traffic of New England Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	TRADE AREA RURAL (000)	TRADE AREA URBAN (000)	TRADE AREA TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	MAINE													
17-5716	Augusta	1	7	15	25	41	17	527	31	12	5	4	8	4
16-5806	Bangor	3	86	115	75	191	29	11,139	169	24	39	11	47	12
14-5831	Houlton	4	68	62	34	96	7	7,105	96	24	61	4	22	2
17-5706	Lewiston-Auburn	3	41	75	91	166	35	4,482	156	4	26	1	31	1
17-5707	Portland	3	27	56	136	192	71	1,820	75	26	67	62	52	40
17-5831	Rockland	1	5	20	13	33	9	590	17	8	5	5	4	3
16-5716	Waterville	2	8	38	31	69	15	3,985	89	20	16	9	20	12
	NEW HAMPSHIRE													
17-5616	Berlin	3	27	19	29	48	20	2,560	80	13	6	1	8	2
18-5606	Concord	1	22	33	49	82	25	1,499	112	37	9	5	16	8
18-5616	Dover	1	12	13	19	32	14	323	30	16	2	2	6	4
19-5516	Keene	2	17	29	25	54	14	1,198	110	47	8	3	12	5
18-5617	Laconia	1	14	20	12	33	12	1,221	49	20	4	#	9	2
18-5531	Lebanon	2	13	13	19	31	7	820	49	15	11	1	13	1
18-5607	Manchester	1	21	22	86	108	77	851	124	78	12	10	22	18
19-5606	Nashua	1	7	10	38	48	31	403	85	55	10	8	10	9
18-5716	Portsmouth	1	15	12	24	36	14	355	30	16	5	4	6	3
18-5618	Rochester	1	16	15	10	25	10	830	42	16	5	2	7	2
	VERMONT													
17-5516	Barre-Montpelier	3	19	50	19	69	11	1,614	129	110	4	1	7	3
19-5531	Bennington	3	9	14	7	22	7	661	20	7	5	3	6	3
17-5416	Burlington	4	25	39	30	69	25	1,398	95	48	7	5	15	10
19-5532	Brattleboro	2	4	10	9	19	9	557	18	17	3	3	3	3
17-5531	Montpelier	See Barre, Vermont												
18-5516	Rutland	3	25	37	26	62	17	1,526	103	39	18	9	19	13
17-5431	St. Albans	3	15	24	8	32	8	694	46	18	10	7	10	6
17-5532	St. Johnsbury	3	34	43	21	64	8	1,892	68	21	22	4	29	6
	MASSACHUSETTS													
Boston Multiple Market		-	97	46	2,146	2,192	781	1,321	1,486	786	295	240	411	301
19-5706	Arlington	1	8	7	85	93	36	83	43	6	#	#	5	1
19-5701	Boston	3	10	-	781	781	781	54	863	786	248	240	317	301
19-5707	Brookline	2	2	-	47	47	47	41	15	6	#	#	2	#
19-5702	Cambridge*	1	1	-	277	277	277	125	11	-	#	-	1	-
19-5708	Chelsea	1	3	-	205	205	46	126	73	30	12	11	8	5
19-5716	Framingham	2	8	6	62	68	22	103	64	37	8	6	14	8
19-5703	Lynn	2	5	3	127	131	102	124	70	37	5	4	11	9
19-5717	Melrose	1	5	2	63	65	23	100	34	4	3	#	5	1
19-5709	Newton	1	4	-	65	65	65	42	12	3	1	#	3	1
19-5718	Norwood	1	15	5	43	49	15	61	53	14	9	#	14	2
19-5710	Quincy	1	15	2	138	139	72	230	72	3	3	#	8	2
19-5711	Salem	1	10	11	147	159	43	149	74	40	3	1	10	5
19-5712	Waltham	3	11	9	103	112	39	83	102	13	3	1	15	7
19-5713	Brockton	1	26	19	148	167	64	528	174	79	8	3	18	8
20-5701	Fall River	1	7	18	158	176	115	330	65	25	19	17	13	9
19-5607	Fitchburg	3	24	28	91	119	41	592	185	58	23	7	29	10
19-5517	Greenfield	3	17	22	40	62	16	775	85	27	8	2	13	5
19-5608	Haverhill	1	16	10	76	86	49	124	177	41	10	1	18	8
19-5506	Holyoke	4	14	10	105	115	57	624	188	109	28	10	25	16
19-5609	Lawrence	1	4	-	123	123	85	100	7	-	29	29	41	40
19-5601	Lowell	2	9	5	126	131	100	83	173	157	6	4	14	11
20-5702	New Bedford	1	34	23	169	192	113	781	130	51	8	5	21	10
19-5517	North Adams	2	9	1	38	39	22	386	114	30	25	8	28	13
19-5507	Pittsfield	3	16	15	67	82	50	580	131	45	16	11	32	21
20-5501	Springfield	4	21	40	279	319	150	754	262	191	43	34	75	65
19-5602	Worcester	3	51	58	358	416	195	1,158	409	163	57	41	87	55
	CONNECTICUT													
21-5503	Bridgeport	1	5	6	183	189	147	221	117	102	25	24	34	32
21-5518	Danbury	2	11	20	34	54	22	486	70	39	3	2	11	7
20-5502	Hartford	1	35	71	288	359	164	1,280	452	266	33	27	66	50
20-5506	Meriden	1	3	-	38	38	38	42	84	74	3	2	5	4
20-5507	New Britain	1	8	5	103	108	68	66	177	91	9	6	14	8
21-5504	New Haven	1	17	63	262	325	163	732	314	187	25	15	48	34
20-5606	New London	1	8	18	49	67	30	294	69	31	23	21	14	9
21-5504	Norwalk	1	8	8	42	50	36	572	43	28	2	1	6	4
20-5616	Norwich	2	9	28	27	56	23	362	64	42	8	3	14	6
20-5508	Waterbury	1	21	26	163	189	100	833	240	104	22	12	38	21
20-5617	Willimantic	2	8	13	12	25	12	404	45	33	1	1	4	3
	RHODE ISLAND													
20-5706	Newport	1	3	5	31	36	28	68	26	21	3	#	4	3
20-5607	Pawtucket	See Providence												
20-5601	Providence	1	42	61	587	648	253	1,096	351	227	68	61	85	70
19-5610	Woonsocket	1	10	13	79	92	49	115	87	42	3	3	9	6
TOTAL NEW ENGLAND		-	1,070	1,419	6,659	8,078	4,252	62,757	7,548	3,933	1,165	776	1,562	1,042

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* Originated and Terminated Cars and Industries of Trade Center reported with Boston.

# Less than 500

SECTION 10. TRADE AREA MARKETS

Analysis 10.3 Freight Traffic of New York and New Jersey Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	TRADE AREA RURAL (000)	TRADE AREA URBAN (000)	TRADE AREA TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	NEW YORK													
19-5401	Albany	3	54	109	161	270	127	2,279	329	193	79	49	3	63
19-5206	Auburn	2	26	36	47	83	37	969	151	66	21	10	25	15
20-5306	Binghamton	5	71	117	129	246	77	3,507	699	112	79	52	81	34
20-5001	Buffalo	8	133	204	837	1,041	573	3,330	1,223	472	364	244	359	234
20-5216	Corning	4	27	53	22	75	16	1,513	144	16	13	4	20	8
20-5206	Elmira	6	52	65	81	146	47	2,759	385	191	43	29	57	34
18-5416	Glens Falls	1	23	34	44	77	19	1,812	125	42	15	6	20	7
19-5416	Gloversville*	1	6	22	36	59	23	2,415	22	-	3	-	6	-
20-5116	Hornell	4	28	43	29	72	16	1,349	134	12	16	3	18	9
20-5217	Ithaca	3	19	29	21	50	21	638	106	53	14	3	16	8
21-5006	Jamestown	4	24	31	52	83	45	695	190	68	17	14	22	14
20-5406	Kingston	3	36	52	35	88	28	1,458	117	61	13	9	20	12
19-5316	Little Falls	1	4	10	19	30	11	557	50	22	5	3	7	5
17-5331	Malone	3	34	35	36	71	9	2,358	171	40	16	4	32	9
21-5416	Middletown	4	48	49	44	93	21	1,473	203	45	15	7	34	12
21-5406	Newburgh	4	36	43	50	93	31	508	106	43	11	5	22	10
17-5216	Ogdensburg	2	14	34	24	58	17	1,756	57	30	13	8	13	6
21-5116	Olean	4	47	64	34	98	22	2,321	165	42	20	9	23	9
20-5316	Oneonta	3	24	34	15	49	13	1,370	105	31	11	6	16	9
19-5216	Oswego	4	28	41	35	76	23	1,089	286	48	23	9	28	12
17-5416	Plattsburg	3	34	50	17	67	13	2,334	96	31	10	3	14	6
20-5407	Poughkeepsie	2	28	48	44	92	40	678	133	63	12	6	24	13
19-5101	Rochester	6	127	169	421	590	328	2,971	1,232	532	126	42	174	98
19-5306	Rome	3	7	8	32	40	32	375	82	45	12	8	13	9
19-5406	Schenectady	2	36	56	158	214	96	786	247	109	23	8	61	29
19-5201	Syracuse	4	55	113	259	372	209	1,968	411	237	93	53	117	95
19-5407	Troy	3	25	34	132	166	73	1,083	107	48	23	14	37	26
19-5301	Utica	4	44	76	140	216	102	2,493	350	163	64	53	86	65
18-5206	Watertown	1	35	77	44	121	32	2,830	227	65	29	18	44	21
New York City Multiple Market		-	421	503	10,442	10,945	1,867	4,301	3,733	642	676	297	1,803	730
	NEW YORK													
21-5501	New York	-	8	-	6,930	6,930	6,930	299	670	660	320	320	766	763
21-5501	Bronx	2	4	-	1,265	1,265	1,265	41	24	18	17	17	24	21
21-5501	Brooklyn-Queensø	2	1	-	3,640	3,640	3,640	179	-	-	6	6	11	11
21-5501	Manhattan	4	3	-	2,026	2,026	2,026	79	646	642	297	297	731	730
21-5516	Freeport	1	61	158	194	352	15	706	694	5	4	#	47	2
21-5517	Oyster Bay	1	37	38	74	112	20	478	105	4	3	#	22	1
21-5501	Yonkers/	2	47	74	447	521	135	448	96	-	14	-	47	-
	CONNECTICUT													
21-5506	Stamford	2	9	38	59	97	46	63	49	30	5	2	13	6
	NEW JERSEY													
21-5502	Elizabeth	4	35	7	343	350	115	342	354	105	52	10	72	25
21-5508	Hackensack	5	68	41	203	243	25	217	215	18	7	#	38	4
21-5502	Jersey City	6	11	-	632	632	632	41	298	186	163	106	420	366
21-5502	Newark	5	34	49	994	1,042	442	398	614	356	54	41	159	109
21-5507	New Brunswick	3	43	51	163	214	35	527	279	30	34	3	154	6
21-5401	Paterson	4	68	48	403	451	139	782	359	139	19	2	65	27
	NEW JERSEY													
23-5506	Atlantic City	2	17	32	109	141	66	876	108	49	4	1	18	9
22-5516	Asbury Park-Long Branch	2	40	72	75	148	18	502	178	52	4	#	20	6
21-5417	Dover	3	36	40	31	71	10	720	113	22	12	1	14	2
22-5416	Phillipsburg	See Easton, Pennsylvania												
22-5401	Trenton	3	62	118	170	288	123	1,073	316	134	72	59	102	74
TOTAL NEW YORK AND NEW JERSEY		-	1,701	2,502	13,828	16,329	10,852	57,146	12,101	4,670	1,951	1,227	3,349	2,272
TOTAL TRUNK LINE		-	4,087	6,451	22,450	28,901	17,038	117,266	25,019	10,286	5,977	2,978	6,676	4,338

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* Originated and terminated cars and industries of trade center not reported - not served by Class I Railroad.

ø Industries not reported separately - included with Manhattan.

/ Originated and terminated cars and industries of trade center not reported separately - included with New York.

# Less than 500.

Analysis 10.4 Freight Traffic of Pennsylvania, Maryland and Delaware Trade Areas - 1932

TRADE AREA NUMBER	TRADE AREA TRADE CENTER	NUMBER OF RAIL-ROADS	NUMBER OF COM-MUN-ITIES	POPULATION TRADE AREA RURAL (000)	POPULATION TRADE AREA URBAN (000)	POPULATION TRADE AREA TOTAL (000)	POPULATION TRADE CENTER (000)	TRADE AREA SQUARE MILES	ON TRACK INDUSTRIES TRADE AREA	ON TRACK INDUSTRIES TRADE CENTER	CARS ORIGINATED TRADE AREA (000)	CARS ORIGINATED TRADE CENTER (000)	CARS TERMINATED TRADE AREA (000)	CARS TERMINATED TRADE CENTER (000)
	PENNSYLVANIA													
22-5306	Allentown	4	63	104	162	265	93	742	365	160	44	3	60	35
22-5106	Altoona	2	70	88	126	214	82	1,236	302	53	76	13	43	24
22-5307	Bethlehem	5	6	8	67	76	58	186	97	56	31	12	22	14
21-5016	Bradford	4	20	17	19	36	19	494	100	56	14	8	18	7
22-5016	Butler	3	36	65	24	89	24	973	114	46	27	11	15	9
21-5316	Carbondale	3	13	28	38	66	20	787	106	44	91	28	35	7
23-5216	Carlisle	2	21	24	13	37	13	317	50	22	4	3	6	5
23-5217	Chambersburg	3	37	50	31	81	14	1,207	153	46	12	5	15	8
22-5131	Clearfield	3	24	38	16	54	9	800	90	33	14	8	11	6
23-5016	Connellsville	6	33	63	28	92	13	502	134	39	11	7	11	7
22-5017	Du Bois	4	23	34	27	61	12	902	102	28	20	6	12	5
22-5406	Easton	7	45	60	92	152	34	1,076	271	90	40	6	39	11
21-4901	Erie	5	33	49	133	183	116	1,092	368	229	30	24	75	65
22-5206	Harrisburg	2	54	91	130	221	80	1,329	241	108	54	31	71	39
21-5306	Hazelton	2	7	36	59	95	37	420	116	76	96	77	15	10
22-5132	Huntingdon	1	11	33	12	46	8	1,021	20	6	8	2	4	3
22-5031	Indiana	3	23	41	12	53	10	497	63	32	2	2	6	3
23-5006	Johnstown	4	44	113	113	226	67	1,198	176	39	25	19	24	13
22-5032	Kittanning	4	43	65	14	79	8	737	125	26	33	9	11	4
23-5306	Lancaster	2	68	92	99	191	60	877	282	106	38	21	57	31
22-5308	Lebanon	2	15	32	36	67	26	360	72	34	13	9	13	10
22-5216	Lewiston	1	20	38	16	55	13	970	47	24	11	6	15	9
22-5231	Lock Haven	2	26	44	23	67	10	1,737	100	32	22	4	18	9
22-5316	Mahanoy City	4	14	19	54	73	15	233	75	27	36	#	33	3
21-4916	Meadville	3	19	28	17	45	17	623	79	32	4	3	11	7
22-4906	New Castle	5	24	41	67	108	49	430	199	116	24	13	22	14
21-5017	Oil City	4	29	45	44	89	22	1,445	143	30	48	15	28	13
22-5317	Pottstown	2	17	26	30	56	19	169	139	47	16	8	23	9
22-5318	Pottsville	5	38	81	97	177	24	579	158	46	219	19	75	17
22-5033	Punxsutawney	3	23	23	9	33	9	366	65	17	18	13	9	7
22-5301	Reading	2	56	102	142	244	111	916	323	164	61	51	61	48
21-5116	St.Marys-Ridgway	3	27	17	21	39	6	1,198	43	21	5	3	6	2
21-5301	Scranton	6	45	59	312	371	143	1,549	432	216	326	158	156	102
22-5217	Shamokin	3	13	47	52	99	20	198	81	32	72	13	61	8
22-4907	Sharon	5	26	31	54	85	26	525	180	81	23	12	33	14
22-5218	Sunbury	3	36	53	42	95	16	1,041	185	37	25	3	26	8
23-5021	Uniontown	5	86	144	40	184	20	656	198	33	62	3	19	6
21-5018	Warren	4	31	30	21	51	15	1,099	131	30	19	7	19	7
23-4916	Washington	4	20	61	42	103	25	675	87	34	35	16	21	10
21-5307	Wilkes-Barre	6	43	93	257	350	87	1,321	228	119	163	39	49	53
21-5206	Williamsport	5	19	37	60	97	46	1,495	142	86	38	33	48	41
23-5206	York	3	57	109	88	197	55	1,341	332	134	61	40	63	41
Philadelphia Multiple Market		-	286	335	2,683	3,018	1,951	3,298	2,296	1,171	434	298	669	465
	PENNSYLVANIA													
22-5407	Norristown	2	60	45	89	134	36	417	284	22	23	4	37	7
22-5401	Philadelphia	3	41	54	2,059	2,114	1,951	415	1,295	1,171	310	298	483	465
22-5402	W. Philadelphia*	4	108	72	206	278	206	479	336	-	25	-	63	-
	NEW JERSEY													
22-5403	Camden	3	77	165	329	493	119	1,987	381	104	75	33	86	35
Pittsburgh Multiple Market		-	229	407	1,470	1,878	670	2,311	1,623	598	973	346	526	394
23-5007	Aliquippa	3	16	12	101	112	27	136	87	13	25	1	24	2
23-5018	Beaver Falls	3	17	36	48	84	17	322	92	26	17	5	15	5
23-5019	Braddock	2	11	22	88	110	19	228	52	22	22	1	6	2
23-5020	Greensburg	2	49	99	54	153	17	467	259	12	187	1	14	3
23-5008	McKeesport	4	45	59	183	242	55	306	275	23	141	8	30	8
23-5017	Natrona	3	34	3	111	114	21	158	110	5	71	1	21	1
23-5001	Pittsburgh	7	57	177	886	1,062	670	694	748	598	510	346	416	394
	MARYLAND													
23-5301	Baltimore	3	113	226	860	1,086	805	2,677	1,124	500	456	223	446	214
24-5331	Cambridge	1	15	39	13	52	9	956	7	2	4	2	6	2
23-5106	Cumberland	3	95	144	67	211	38	5,294	260	67	41	16	36	23
23-5216	Frederick	3	36	47	18	65	14	916	89	31	6	3	9	4
23-5207	Hagerstown	3	19	35	31	66	31	459	118	90	16	13	21	18
24-5416	Salisbury	1	49	96	20	116	11	1,973	75	11	17	1	17	3
	DISTRICT OF COLUMBIA													
24-5201	Washington	5	86	217	575	791	487	4,632	334	124	29	16	160	110
	DELAWARE													
23-5302	Wilmington	3	100	141	148	288	107	2,285	278	108	80	20	75	26
TOTAL PENNSYLVANIA, MARYLAND, DELAWARE		-	2,386	3,949	8,622	12,572	6,187	60,120	12,918	5,616	4,026	1,751	3,327	2,065

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* Originated and Terminated Cars and Industries of Trade Center reported with Philadelphia. # Less than 500

Analysis 10.5 Freight Traffic of Michigan and Ohio Trade Areas - 1932

TRADE AREA NUMBER	TRADE AREA TRADE CENTER	NUMBER OF RAIL-ROADS	NUMBER OF COM-MUN-ITIES	POPULATION TRADE AREA RURAL (000)	POPULATION TRADE AREA URBAN (000)	POPULATION TRADE AREA TOTAL (000)	POPULATION TRADE CENTER (000)	TRADE AREA SQUARE MILES	ON TRACK INDUSTRIES TRADE AREA	ON TRACK INDUSTRIES TRADE CENTER	CARS ORIGINATED TRADE AREA (000)	CARS ORIGINATED TRADE CENTER (000)	CARS TERMINATED TRADE AREA (000)	CARS TERMINATED TRADE CENTER (000)
	MICHIGAN													
21-4616	Adrian	4	22	28	18	46	13	632	116	43	11	6	10	6
18-4616	Alpena	1	12	22	15	38	12	2,507	21	15	10	5	7	6
21-4606	Ann Arbor	4	14	28	37	66	27	704	99	56	3	1	11	7
21-4506	Battle Creek	3	14	45	55	100	46	1,108	215	123	25	23	30	23
19-4606	Bay City	2	19	55	47	103	47	3,600	175	155	14	10	12	7
19-4431	Cadillac	3	33	34	10	44	10	2,318	174	39	10	3	9	4
20-4601	Flint	6	45	102	182	284	156	1,967	401	116	38	23	53	31
20-4401	Grand Rapids	4	97	191	215	406	169	4,501	1,099	517	50	33	74	48
21-4507	Jackson	4	31	67	69	136	55	1,554	237	144	23	14	30	20
21-4406	Kalamazoo	5	47	98	81	179	55	2,182	469	239	26	14	55	34
20-4506	Lansing	3	44	85	105	190	78	2,206	387	189	25	12	29	20
19-4432	Manistee	2	19	28	17	45	8	1,823	123	27	8	#	10	1
20-4406	Muskegon	3	19	53	65	119	57	1,585	196	101	17	14	16	10
18-4531	Petoskey	3	33	44	13	57	6	3,199	127	29	8	4	9	4
20-4606	Pontiac	3	21	35	65	100	65	531	137	75	22	13	14	12
20-4706	Port Huron	2	20	52	38	90	31	1,296	165	67	25	23	20	17
20-4607	Saginaw	5	87	149	111	260	81	4,579	753	280	61	16	56	26
18-4416	Traverse City	2	14	22	13	34	13	1,504	77	37	3	2	5	5
Detroit Multiple Market		-	36	132	1,947	2,080	1,569	1,473	2,125	1,865	246	227	417	374
21-4706	Dearborn	4	14	49	144	193	50	487	72	14	13	#	18	2
21-4701	Detroit	6	3	2	1,698	1,699	1,569	186	1,878	1,865	227	227	375	374
21-4717	Mt. Clemens	5	14	29	39	68	13	330	128	24	5	2	19	7
21-4716	Royal Oak	3	5	54	66	120	23	470	47	26	#	#	5	3
	OHIO													
22-4801	Akron	5	45	99	341	440	255	1,564	551	257	74	52	109	79
22-4816	Alliance	2	9	20	30	50	23	195	95	71	4	4	7	7
21-4916	Ashtabula	4	19	35	37	72	23	747	193	75	24	5	87	27
24-4831	Athens	3	23	48	23	70	7	939	85	30	9	2	12	5
22-4802	Canton	4	60	101	177	278	105	1,672	528	208	84	31	61	32
24-4716	Chillicothe	4	26	56	30	85	18	1,545	109	44	9	6	13	9
25-4601	Cincinnati	7	153	303	732	1,036	516	5,874	1,214	770	277	218	266	210
23-4701	Columbus	6	66	123	336	460	291	2,479	743	507	118	95	142	124
24-4601	Dayton	5	21	88	226	314	201	932	492	319	49	34	80	60
22-4916	E. Liverpool	2	16	35	47	82	23	401	116	37	44	4	35	5
22-4616	Findlay	5	15	25	24	49	19	557	96	58	12	5	8	5
24-4631	Greenville	2	21	32	11	44	7	675	95	33	5	2	5	2
24-4606	Hamilton	2	7	16	55	71	52	249	93	82	19	19	23	22
24-4717	Lancaster	3	22	36	25	61	19	881	106	29	14	6	11	5
23-4606	Lima	8	91	123	86	208	42	2,699	584	110	48	16	48	19
23-4706	Mansfield	5	40	71	67	139	34	1,605	282	113	44	17	56	24
24-4816	Marietta	2	12	29	14	43	14	636	74	49	6	4	6	5
23-4706	Marion	5	40	44	45	89	31	1,309	225	74	27	7	20	11
23-4707	Newark	3	21	45	40	85	31	1,115	184	75	24	6	15	7
23-4616	Piqua	4	18	28	34	62	16	697	126	57	9	5	13	8
25-4706	Portsmouth	4	18	86	48	134	43	1,925	93	65	20	18	21	17
22-4716	Sandusky	5	29	32	46	78	25	787	258	81	25	12	111	89
24-4606	Springfield	4	44	66	86	152	69	1,383	188	86	26	18	33	22
23-4906	Steubenville	4	23	45	69	114	35	471	118	49	86	21	43	23
22-4601	Toledo	12	150	234	391	624	291	4,207	1,244	501	219	145	390	326
24-4731	Washington C.H.	4	12	24	12	37	8	687	67	31	4	2	4	2
22-4901	Youngstown	5	46	75	294	369	170	1,199	486	169	175	44	129	75
23-4806	Zanesville	5	70	124	72	196	36	2,900	250	118	63	12	32	14
Cleveland Multiple Market		-	63	116	1,278	1,394	900	2,069	1,737	1,340	331	196	526	371
22-4803	Cleveland	6	23	33	1,011	1,045	900	557	1,432	1,340	197	196	382	371
22-4817	Euclid*	4	17	35	167	202	13	798	107	-	2	-	7	-
22-4806	Lorain	5	17	32	77	109	45	497	122	49	118	94	107	95
22-4818	Painesville	3	6	16	23	38	11	217	76	50	14	13	29	27
TOTAL MICHIGAN AND OHIO		-	1,807	3,432	7,780	11,212	5,958	81,668	17,517	9,718	2,476	1,558	3,173	2,393
TOTAL CENTRAL		-	5,253	7,255	16,214	23,469	12,320	185,259	41,328	20,941	6,138	3,795	6,936	5,048

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* Originated and Terminated Cars and Industries of Trade Center reported with Cleveland. # Less than 500.

Analysis 10.6 Freight Traffic of Illinois, Indiana and Wisconsin Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA SQUARE MILES	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	TRADE AREA			TRADE CENTER (000)		TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
				RURAL (000)	URBAN (000)	TOTAL (000)								
	ILLINOIS													
22-4206	Aurora	5	38	37	71	109	47	1,124	338	133	18	9	35	22
23-4206	Bloomington	7	82	61	48	109	31	1,943	279	76	23	10	30	21
27-4217	Cairo	9	162	176	53	229	14	5,703	405	80	34	20	42	12
24-4306	Danville	10	93	73	50	122	37	1,872	332	80	38	21	29	21
24-4206	Decatur	6	139	104	92	196	58	3,300	659	148	68	34	77	45
22-4207	Elgin	5	34	15	44	60	36	363	162	85	9	2	12	7
21-4116	Freeport	5	45	46	27	73	22	1,230	246	105	17	10	18	12
23-4106	Galesburg	3	38	33	40	73	29	1,257	237	92	22	16	22	16
22-4208	Joliet	9	43	72	52	124	43	1,235	276	171	74	29	44	29
23-4316	Kankakee	8	76	65	29	95	21	2,302	259	65	38	11	20	11
23-4116	Kewanee	4	25	25	20	45	17	878	135	23	14	2	8	4
27-4231	Marion	6	45	58	51	109	9	1,094	166	15	122	1	19	3
26-4216	Mount Vernon	8	74	85	57	141	12	2,579	176	29	129	3	18	5
23-4101	Peoria	11	129	132	161	293	105	3,994	666	254	115	51	106	65
22-4231	Peru-La Salle	6	67	56	60	115	9	1,737	332	65	59	25	32	14
24-4006	Quincy	4	47	63	39	102	39	2,595	328	188	23	12	22	18
21-4206	Rockford	5	64	93	134	227	86	2,584	675	321	33	11	52	27
24-4106	Springfield	9	155	132	129	261	72	4,024	628	133	83	22	57	25
23-4216	Streator	10	45	30	15	45	15	1,074	114	54	17	8	15	11
24-4216	Urbana-Champaign	7	61	40	39	79	13	1,377	268	81	19	7	22	15
Chicago	Multiple Market	-	272	197	4,306	4,504	3,376	3,022	5,456	4,548	1,321	1,195	1,748	1,403
	ILLINOIS													
22-4301	Chicago	24	30	-	3,376	3,376	3,376	199	4,556	4,548	1,250	1,195	1,569	1,403
22-4306	Evanston*	4	47	28	179	207	63	525	287	-	25	#	93	4
22-4307	Oak Park*	13	93	85	414	499	64	782	313	-	25	#	61	6
	INDIANA													
22-4303	East Chicago	14	102	84	337	421	55	1,516	300	45	21	1	25	3
	INDIANA													
24-4506	Anderson	3	15	28	55	83	40	450	205	122	17	13	26	17
25-4416	Bedford	4	36	41	19	60	13	1,119	130	70	21	7	20	8
24-4416	Crawfordsville	4	23	26	10	36	10	652	69	30	4	2	7	4
22-4406	Elkhart	4	18	40	46	87	33	930	239	66	15	8	24	13
26-4301	Evansville	7	177	213	169	381	102	5,671	1,241	251	153	32	60	33
22-4501	Ft. Wayne	8	107	142	157	299	115	3,497	667	177	88	42	72	45
23-4416	Frankfort	4	14	15	12	27	12	408	79	46	4	4	6	5
23-4516	Huntington	3	7	16	13	29	13	386	42	33	4	4	6	6
24-4401	Indianapolis	7	296	263	463	726	364	6,220	1,330	486	178	128	221	161
23-4406	Kokomo	2	15	22	38	60	33	527	114	71	9	7	13	12
23-4407	La Fayette	4	38	36	35	71	26	1,220	174	77	15	9	19	15
23-4417	Logansport	5	57	56	21	77	19	1,704	207	54	18	7	15	9
25-4531	Madison	4	18	40	10	49	7	1,166	31	4	2	1	4	1
23-4517	Marion	4	22	28	30	57	24	533	142	84	12	8	15	11
22-4308	Michigan City	11	32	22	42	64	27	687	151	69	9	5	17	8
23-4506	Muncie	4	51	68	80	147	47	1,549	389	123	37	22	49	25
23-4418	Peru	5	23	21	16	38	13	637	127	57	9	7	10	7
24-4507	Richmond	5	33	45	51	96	32	1,080	161	21	13	8	20	11
22-4401	South Bend	10	62	111	183	294	104	2,176	490	104	25	12	52	22
24-4307	Terre Haute	9	171	198	121	319	63	5,030	593	139	167	34	64	29
25-4316	Vincennes	9	80	121	62	183	18	3,505	346	71	73	8	37	9
23-4431	Wabash	4	14	14	12	25	9	425	87	46	4	2	6	3
	WISCONSIN													
19-4206	Appleton	3	35	46	61	108	25	1,172	341	61	25	7	41	13
20-4206	Fond du Lac	3	32	51	41	92	26	1,351	304	122	14	7	22	11
19-4207	Green Bay	5	44	95	55	150	37	3,385	372	117	44	36	31	21
21-4216	Janesville	2	17	26	30	56	22	812	211	101	20	13	19	14
21-4306	Kenosha	3	16	16	53	70	50	366	122	65	9	6	13	9
20-4106	Madison	4	104	173	88	261	58	6,160	754	163	36	14	66	32
19-4316	Manitowoc	3	21	26	33	59	23	602	130	57	22	13	18	18
20-4201	Milwaukee	5	99	161	753	914	578	3,068	1,878	1,235	299	239	321	247
19-4208	Oshkosh	3	18	32	44	76	40	1,098	265	127	12	10	16	13
21-4307	Racine	2	8	15	68	83	68	227	141	122	11	9	12	11
20-4306	Sheboygan	2	9	25	46	71	39	521	142	61	16	12	14	11
TOTAL ILLINOIS, INDIANA, WISCONSIN		-	3,446	3,823	8,434	12,256	6,362	103,591	23,811	11,223	3,662	2,237	3,763	2,655

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* Industries not reported separately - included with Chicago.

Less than 500.

Analysis 10.7 Freight Traffic of Virginia and West Virginia Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA SQUARE MILES	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	TRADE AREA			TRADE CENTER (000)		TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
				RURAL (000)	URBAN (000)	TOTAL (000)								
	VIRGINIA													
25-5116	Charlottesville	2	27	58	15	73	15	1,669	150	77	10	5	15	9
26-5031	Covington	2	21	83	13	97	7	3,332	86	20	22	8	33	18
27-5116	Danville	4	45	148	48	196	22	3,076	269	132	23	11	29	12
25-5231	Fredericksburg	1	6	74	7	81	7	2,441	26	13	4	3	5	5
25-5131	Harrisonburg	3	12	55	7	62	7	1,453	106	40	11	2	10	3
26-5106	Lynchburg	4	38	99	44	143	41	2,683	156	121	25	21	31	26
26-5401	Norfolk	8	136	315	251	566	46	5,432	524	331	139	91	388	313
26-5206	Petersburg	4	50	126	44	171	29	3,472	115	42	20	11	20	12
26-5201	Richmond	7	80	167	187	354	183	4,970	666	511	104	83	107	83
26-5006	Roanoke	4	34	189	106	295	69	5,100	292	154	68	34	72	44
25-5117	Staunton	3	13	32	18	50	12	1,006	65	30	13	5	13	6
24-5116	Winchester	3	22	37	13	50	11	1,077	104	24	11	7	7	6
	WEST VIRGINIA													
26-4931	Beckley	3	34	103	20	123	9	1,300	205	25	195	1	22	3
26-4916	Bluefield	4	38	243	38	281	23	3,821	335	98	558	39	34	16
25-4806	Charleston	4	82	208	77	285	60	3,351	302	131	192	26	51	35
24-4906	Clarksburg	3	51	124	53	177	29	2,990	201	66	35	17	26	18
24-5031	Elkins	2	64	41	7	49	7	1,963	111	34	25	2	9	3
24-5016	Fairmont	3	37	40	26	67	23	23,159	67	23	49	11	16	14
24-5032	Grafton	2	17	23	10	33	8	453	38	16	6	1	3	3
25-4807	Huntington	6	69	329	116	445	76	5,735	437	146	201	30	94	59
26-4831	Logan	1	16	54	4	59	4	438	93	33	175	10	5	4
23-5116	Martinsburg	2	35	35	17	52	15	769	113	37	28	13	11	6
24-5017	Morgantown	2	53	68	18	86	16	1,123	118	32	100	2	6	4
24-4806	Parkersburg	1	18	72	32	104	30	1,708	85	57	18	17	21	18
23-4906	Wheeling	4	59	146	147	293	62	2,324	357	108	97	25	57	28
TOTAL POCAHONTAS TERRITORY		-	1,057	2,869	1,320	4,190	810	84,845	5,021	2,301	2,128	475	1,088	748

Analysis 10.8 Freight Traffic of Kentucky, Tennessee, North and South Carolina Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	TRADE AREA RURAL (000)	TRADE AREA URBAN (000)	TRADE AREA TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	KENTUCKY													
25-4808	Ashland	5	16	78	47	125	29	1,604	148	53	43	25	30	21
27-4416	Bowling Green	1	50	157	24	181	12	4,554	110	32	17	3	12	4
26-4631	Danville	2	21	50	11	61	7	1,093	33	29	4	2	5	2
26-4616	Frankfort	1	3	9	12	21	12	199	29	27	2	2	3	3
27-4731	Hazard	1	97	104	7	111	7	1,828	99	4	120	3	8	3
27-4316	Hopkinsville	2	18	48	16	64	11	1,547	88	56	11	6	13	6
26-4606	Lexington	3	63	146	68	214	46	3,161	284	175	31	21	37	24
26-4501	Louisville	6	201	321	359	679	308	8,270	841	434	241	95	139	109
25-4631	Maysville	2	10	25	7	32	7	552	29	28	6	6	4	4
27-4716	Middlesboro	2	298	226	33	259	10	3,758	255	43	139	2	30	4
26-4416	Owensboro	2	105	102	30	131	23	2,065	133	59	72	5	12	6
27-4206	Paducah	5	39	110	50	160	34	3,222	164	65	23	14	25	16
27-4631	Somerset	2	6	82	6	87	6	2,074	25	20	1	1	5	2
26-4632	Winchester	2	50	74	16	91	8	1,979	74	32	8	2	8	3
	TENNESSEE													
27-4816	Bristol	4	49	193	56	249	21	3,779	141	67	22	8	28	11
29-4601	Chattanooga	4	64	224	149	372	120	6,305	821	606	81	48	73	45
28-4431	Clarksville	3	29	40	9	50	9	1,162	37	28	7	6	7	6
29-4431	Columbia	2	40	44	11	55	8	1,246	78	20	9	1	6	2
29-4216	Jackson	3	62	212	44	257	22	5,424	254	73	33	12	44	20
28-4806	Johnson City	2	50	148	42	190	25	2,838	152	126	18	8	18	11
28-4701	Knoxville	2	140	304	144	448	106	7,358	789	598	85	33	67	38
30-4101	Memphis	11	218	514	301	814	253	10,819	1,252	800	180	142	164	129
28-4731	Morristown	1	7	60	10	70	7	1,238	35	6	4	2	7	3
28-4531	Murfreesboro	2	10	82	21	103	8	2,403	95	22	7	1	8	3
28-4401	Nashville	3	126	350	180	530	154	8,285	982	770	83	63	101	77
	NORTH CAROLINA													
28-4807	Asheville	3	49	218	73	291	50	5,856	306	94	24	7	54	17
29-5006	Charlotte	4	112	423	209	632	83	6,834	947	344	79	26	100	32
27-5106	Durham	4	8	69	58	128	52	1,544	145	98	17	16	19	16
27-5416	Elizabeth City	3	46	71	14	84	10	2,232	50	30	6	3	4	2
29-5216	Fayetteville	2	52	77	18	95	13	1,894	22	5	7	5	8	7
28-5216	Goldsboro	2	23	88	20	108	15	1,515	61	32	10	7	12	8
28-5106	Greensboro	2	18	119	118	237	54	2,324	495	231	27	14	36	18
28-5331	Greenville	2	26	48	11	59	9	690	72	53	4	3	5	4
27-5231	Henderson	3	14	58	10	68	6	930	85	52	9	7	11	8
28-5316	Kinston	2	7	37	11	49	11	683	38	35	3	2	4	3
28-5317	New Bern	2	46	49	18	67	12	2,001	62	42	8	5	3	2
28-5206	Raleigh	4	103	207	49	256	37	3,595	342	148	29	11	40	20
27-5216	Rocky Mount	2	34	83	30	113	21	1,264	35	-	5	2	10	5
28-5016	Salisbury	1	8	42	22	64	17	631	172	141	4	3	9	8
28-5017	Statesville	1	6	44	16	60	10	877	119	101	9	7	8	5
28-5332	Washington	2	71	71	14	85	7	2,507	75	27	7	3	8	4
29-5306	Wilmington	2	94	181	36	218	32	5,664	111	27	37	30	18	11
28-5217	Wilson	2	12	32	13	45	13	373	43	31	5	5	6	6
28-5006	Winston-Salem	2	19	218	105	323	75	4,200	242	111	43	29	41	26
	SOUTH CAROLINA													
30-4817	Anderson	2	8	53	17	70	14	644	36	16	1	1	4	2
31-5106	Charleston	3	129	127	70	196	62	4,620	172	101	46	40	25	21
30-5006	Columbia	3	62	166	81	247	52	4,219	247	205	38	27	38	25
30-5116	Florence	2	100	178	43	221	15	3,705	280	6	17	3	23	5
31-5231	Georgetown	2	18	53	8	61	5	1,986	35	10	5	1	3	1
29-4816	Greenville	2	27	171	52	223	29	2,468	248	179	16	8	16	16
30-4916	Greenwood	4	34	52	19	71	11	1,368	85	43	11	8	14	9
31-5031	Orangeburg	3	48	95	11	107	9	2,024	103	40	7	2	7	3
29-5016	Rock Hill	2	16	82	32	113	11	1,756	118	52	7	4	13	6
29-4906	Spartanburg	3	33	130	49	179	29	1,632	170	64	19	1	26	1
30-5016	Sumter	3	37	86	14	100	12	1,687	49	11	9	6	13	9
TOTAL KENTUCKY, TENNESSEE, NORTH AND SOUTH CAROLINA		-	3,032	7,029	2,894	9,923	2,029	158,086	11,913	6,502	1,762	799	1,430	952
TOTAL SOUTHEASTERN		-	6,832	13,838	6,344	20,182	4,518	390,409	25,734	12,577	3,475	1,652	3,083	1,917

Analysis 10.9 Freight Traffic of Mississippi, East Louisiana, Alabama, Georgia and Florida Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	TRADE AREA RURAL (000)	TRADE AREA URBAN (000)	TRADE AREA TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	MISSISSIPPI													
35-4306	Biloxi-Gulfport	1	25	27	36	63	27	1,483	70	57	4	3	10	9
31-4116	Clarksdale	1	65	88	12	100	10	1,290	92	25	14	8	14	10
31-4316	Columbus	3	71	173	26	199	11	5,087	217	59	19	8	19	6
30-4331	Corinth	4	29	95	6	102	6	2,616	77	56	7	3	7	5
32-4016	Greenville	2	72	97	24	121	15	1,561	132	52	15	7	14	9
31-4117	Greenwood	2	93	209	29	239	11	4,289	228	51	20	8	20	11
34-4216	Hattiesburg	5	57	135	44	179	19	5,201	332	90	31	9	18	6
33-4106	Jackson	3	123	261	69	330	48	7,084	351	99	43	22	39	26
34-4116	McComb	3	22	89	17	106	10	2,537	94	23	9	2	8	3
33-4306	Meridian	3	37	174	37	211	32	5,959	217	153	41	16	24	19
34-4016	Natchez	4	48	100	16	116	13	4,231	105	25	9	2	11	3
30-4332	Tupelo	5	39	176	17	193	6	4,579	130	36	13	3	16	6
33-4116	Vicksburg	3	71	89	29	118	23	3,641	157	42	20	10	21	11
	LOUISIANA													
35-4006	Baton Rouge	5	257	247	71	318	31	5,767	452	57	69	27	51	16
35-4101	New Orleans	7	231	250	542	791	459	10,054	865	442	167	101	207	105
	ALABAMA													
31-4516	Anniston	4	50	76	36	112	22	2,387	218	163	12	9	15	12
31-4401	Birmingham	8	259	373	326	699	260	7,725	930	411	225	104	126	95
30-4416	Decatur	2	38	99	23	122	16	2,161	111	78	8	6	11	7
34-4616	Dothan	3	76	210	42	252	16	6,825	169	22	16	3	14	5
30-4316	Florence	3	42	123	29	151	12	3,669	161	29	12	2	14	3
31-4517	Gadsden	4	17	106	43	148	24	1,761	251	111	15	5	21	8
30-4417	Huntsville	3	15	82	15	97	12	1,632	153	117	7	5	8	7
34-4306	Mobile	5	98	164	83	247	68	7,629	357	252	42	28	39	30
32-4506	Montgomery	6	123	293	96	389	66	8,529	555	262	58	40	51	35
32-4631	Opelika	4	12	49	9	58	6	1,425	39	22	2	2	4	3
32-4416	Selma	4	65	135	24	160	18	4,248	186	111	18	10	16	10
33-4531	Troy	2	14	31	7	38	7	826	43	17	2	2	2	2
32-4417	Tuscaloosa	3	39	82	21	103	21	2,373	77	43	13	6	11	8
	GEORGIA													
33-4716	Albany	3	29	99	22	121	15	3,238	195	50	17	11	12	8
33-4731	Americus	3	14	37	12	49	9	888	104	40	9	8	5	4
30-4816	Athens	4	34	130	35	165	18	3,284	234	78	10	4	20	10
31-4701	Atlanta	6	142	373	344	718	270	7,156	1,394	923	119	82	161	117
31-4906	Augusta	4	101	218	82	300	60	7,010	442	173	42	18	41	25
34-4731	Bainbridge	2	18	34	6	40	6	1,076	45	29	7	2	4	3
33-5016	Brunswick	3	20	30	14	44	14	2,095	72	50	11	8	15	12
32-4606	Columbus	3	42	101	61	162	43	3,419	274	129	33	27	37	29
33-4732	Cordele	3	19	49	7	56	7	1,193	95	71	7	5	7	5
32-4831	Dublin*	2	13	86	10	95	7	2,353	29	-	2	-	3	-
33-4831	Fitzgerald	3	28	42	10	51	6	1,115	71	29	6	3	10	4
30-4731	Gainesville	1	17	121	17	138	9	3,401	49	15	5	2	11	2
31-4716	Griffin	2	11	34	14	47	10	653	80	43	5	4	7	5
32-4616	La Grange	3	34	70	41	111	20	1,702	104	37	10	5	12	6
32-4706	Macon	3	56	189	82	270	54	6,088	535	196	59	35	48	30
30-4616	Rome	3	21	63	46	109	22	1,678	195	113	19	8	22	12
32-5006	Savannah	5	106	208	98	305	85	7,278	346	170	62	34	58	33
34-4716	Thomasville	4	38	85	26	111	12	2,257	83	11	9	5	12	6
34-4816	Valdosta	3	47	77	19	96	13	3,354	151	68	13	7	11	6
33-4916	Waycross	3	86	84	22	106	16	3,889	114	11	9	3	12	3
	FLORIDA													
35-5116	Daytona Beach	2	28	29	29	57	17	2,394	86	22	4	#	6	2
35-4916	Gainesville	2	63	45	10	56	10	2,885	49	13	14	1	6	2
34-5001	Jacksonville	4	107	109	164	273	130	7,507	544	374	101	88	106	92
31-5016	Key West	1	3	1	13	14	13	1,100	9	3	3	3	3	3
39-5201	Miami	2	17	21	142	163	111	3,231	187	84	11	4	17	11
36-4931	Ocala	2	71	34	7	42	7	2,730	99	23	19	4	6	2
36-5006	Orlando	3	118	51	51	102	27	3,653	180	40	17	1	13	3
35-4406	Pensacola	2	60	75	37	112	32	4,499	144	83	20	9	28	23
37-4906	St. Petersburg	2	10	9	48	57	40	176	97	47	3	1	7	5
34-4717	Tallahassee	2	68	85	26	111	11	6,294	121	52	13	3	16	5
37-4901	Tampa	2	276	151	191	342	101	13,796	771	142	135	18	112	23
38-5206	W. Palm Beach	2	15	36	39	75	27	4,362	153	51	11	2	13	5
TOTAL MISSISSIPPI, EAST LOUISIANA, ALABAMA, GEORGIA AND FLORIDA		-	3,800	6,809	3,450	10,259	2,489	232,323	13,821	6,075	1,713	853	1,653	964

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* Originated and Terminated Cars and Industries of Trade Center not reported - not served by Class I Railroads.

# Less than 500.

SECTION 10. TRADE AREA MARKETS

Analysis 10.10 Freight Traffic of Minnesota, Iowa, North Missouri, Wisconsin and Michigan Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
				TRADE AREA										
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	RURAL (000)	URBAN (000)	TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	MINNESOTA													
20-3816	Albert Lea	6	41	46	22	69	10	1,749	242	36	23	5	36	7
17-3716	Brainerd	2	15	29	19	48	10	2,224	128	36	2	1	6	2
16-3901	Duluth	6	205	151	163	314	101	23,953	780	361	161	136	123	91
17-3631	Fergus Falls	3	17	50	9	59	9	2,984	152	25	3	1	4	2
16-3816	Hibbing	2	15	10	29	39	16	1,521	49	32	22	15	4	3
19-3716	Mankato	4	74	132	49	180	14	5,298	480	52	44	13	30	10
18-3801	Minneapolis	8	112	285	545	830	464	10,953	1,773	1,040	178	154	192	157
19-3916	Rochester	3	35	50	21	70	21	1,926	209	45	6	2	13	8
18-3716	St. Cloud	3	49	130	37	167	21	5,611	368	65	15	4	20	7
18-3802	St. Paul	6	135	201	337	538	272	7,268	1,008	282	163	116	195	139
19-3917	Winona	4	24	27	21	48	21	1,227	124	64	15	14	11	8
	IOWA													
23-3731	Atlantic	2	12	24	8	32	6	1,007	99	21	5	2	6	3
23-4006	Burlington	4	48	40	30	71	27	1,507	285	103	24	18	27	21
22-3906	Cedar Rapids	4	75	82	75	157	56	3,293	489	173	73	60	72	57
23-3831	Centerville	3	32	29	10	39	8	1,037	101	26	14	5	7	4
22-4106	Clinton	4	68	58	54	112	26	2,071	314	405	33	15	37	17
23-3732	Creston	1	25	26	11	36	9	1,096	126	33	8	6	10	7
22-4006	Davenport	4	58	59	150	208	61	1,865	513	276	67	44	70	48
22-3801	Des Moines	7	214	246	228	473	143	8,758	1,093	155	131	54	109	57
21-4006	Dubuque	5	93	106	55	161	42	3,815	447	141	31	18	36	21
21-3716	Fort Dodge	6	121	127	47	174	22	5,243	711	62	41	6	30	8
22-3917	Iowa City	1	19	23	15	38	15	921	97	38	6	3	8	6
24-4016	Keokuk	4	69	56	29	85	15	2,167	289	64	15	6	20	8
22-3817	Marshalltown	5	58	50	27	77	17	1,773	352	108	20	4	23	6
20-3816	Mason City	4	110	128	53	181	23	5,237	631	108	44	25	40	20
22-4016	Muscatine	4	39	35	22	56	17	1,227	154	55	18	11	16	8
23-3916	Oskaloosa	6	27	24	10	35	10	828	108	58	4	2	4	2
23-3907	Ottumwa	6	66	56	44	100	28	2,405	294	99	31	19	32	23
21-3506	Sioux City	6	142	242	125	367	79	9,680	1,152	186	72	39	72	43
21-3906	Waterloo	5	65	89	71	159	46	3,053	423	103	28	16	39	24
	MISSOURI													
24-3831	Chillicothe	4	55	60	22	81	8	2,644	198	46	7	1	8	2
25-3916	Columbia	5	31	27	26	52	15	1,432	87	30	6	1	9	3
24-4016	Hannibal	3	69	71	26	98	23	2,707	156	72	16	7	16	9
26-3916	Jefferson City	5	42	77	35	111	22	3,821	134	33	7	3	17	8
25-3701	Kansas City	12	189	244	578	822	522	6,563	1,334	914	427	369	386	335
24-3931	Kirksville	4	45	45	8	53	8	2,046	118	41	4	1	7	2
25-3917	Moberly	5	50	67	24	91	14	2,947	203	44	13	5	18	8
24-3706	St. Joseph	5	207	217	103	320	81	8,208	824	199	49	37	61	34
26-3816	Sedalia	6	82	115	50	164	21	5,235	258	54	26	4	25	5
St. Louis Multiple Market		-	450	584	1,251	1,836	822	16,100	3,191	1,255	625	278	625	389
	MISSOURI													
26-4101	St. Louis	10	151	154	866	1,020	822	7,389	1,582	1,255	317	278	422	389
26-4116	Webster Groves	6	41	140	96	236	16	1,022	83	3	13	#	8	#
	ILLINOIS													
26-4107	Alton	5	34	40	47	87	30	980	178	116	78	76	38	35
26-4106	E. St. Louis	16	224	250	242	493	74	6,709	1,348	139	217	106	158	98
	WISCONSIN													
16-4016	Ashland	4	46	46	16	62	11	5,184	131	49	19	11	14	10
19-3906	Eau Claire	3	47	114	41	155	26	5,200	355	102	21	14	24	16
20-4006	La Crosse	4	94	147	59	206	40	6,092	561	129	30	17	38	20
18-4216	Marinette-Menominee	3	24	24	29	53	24	1,606	160	34	15	4	14	3
19-4116	Stevens Point	3	29	53	25	78	14	2,148	215	41	21	12	27	14
16-3906	Superior	7	36	26	39	64	36	2,731	76	34	60	47	47	28
18-4116	Wausau	3	136	124	63	187	24	6,534	690	120	44	11	53	11
	MICHIGAN													
16-4216	Calumet-Laurium*	2	54	45	29	73	16	3,156	61	-	6	-	5	-
17-4316	Escanaba	5	45	24	25	49	15	3,010	76	16	12	4	14	4
17-4216	Iron Mountain	3	36	31	31	62	12	3,344	200	46	18	3	15	7
17-4016	Ironwood	4	49	28	25	54	14	3,526	227	75	19	1	12	5
16-4316	Marquette	5	45	19	35	53	15	2,790	185	44	25	22	25	14
16-4516	Sault Ste. Marie	2	53	24	16	40	14	3,537	81	16	12	4	10	5
TOTAL MINNESOTA, IOWA, NORTH MISSOURI, WISCONSIN AND MICHIGAN		-	3,977	4,823	4,869	9,692	3,524	222,258	22,512	7,904	2,779	1,848	2,763	1,884

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* Originating and Terminating Cars and Industries of Trade Center not reported - not served by Class I Railroad

Less than 500.

SECTION 10. TRADE AREA MARKETS

Analysis 10.11 Freight Traffic of North Dakota, Wyoming, South Dakota, Nebraska, Colorado and Kansas Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
				TRADE AREA										
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	RURAL (000)	URBAN (000)	TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	NORTH DAKOTA													
16-3216	Bismarck	3	45	54	11	65	11	7,596	253	48	10	4	12	7
15-3431	Devils Lake	3	37	53	5	59	5	5,505	171	31	3	2	6	4
16-3031	Dickinson	2	25	32	5	37	5	6,995	140	18	6	2	5	3
16-3506	Fargo	4	96	144	45	190	29	11,041	725	141	39	19	43	17
15-3516	Grand Forks	3	86	153	34	186	17	14,692	457	78	26	13	30	16
16-3431	Jamestown	4	47	53	10	64	8	6,017	275	24	9	3	11	5
16-3238	Mandan	3	49	58	5	63	5	8,701	216	15	29	8	10	7
15-3216	Minot	2	77	106	16	122	16	12,969	497	90	25	4	15	7
16-3442	Valley City	3	22	20	5	26	5	2,227	127	30	5	2	6	4
14-3031	Williston	3	40	82	10	91	5	18,088	191	22	6	#	8	1
	WYOMING													
22-2816	Cheyenne	2	83	27	21	48	17	6,989	269	111	35	22	33	21
	SOUTH DAKOTA													
18-3416	Aberdeen	5	139	127	23	149	16	20,523	720	74	39	17	33	13
19-3531	Brookings	3	16	27	4	31	4	1,520	110	35	2	#	4	2
19-2938	Deadwood	2	44	23	8	31	3	8,634	153	31	5	1	10	3
19-3416	Huron	3	25	44	11	55	11	4,393	211	29	9	6	12	7
20-3416	Mitchell	2	38	82	11	93	11	7,621	297	35	9	3	18	6
19-3231	Pierre	2	30	50	4	53	4	14,663	168	21	7	1	9	3
19-3016	Rapid City	3	50	43	13	56	10	12,906	140	50	9	5	11	6
20-3506	Sioux Falls	5	112	183	58	241	33	9,195	825	180	41	24	52	24
18-3516	Watertown	5	57	89	15	103	10	6,172	428	72	12	4	13	5
21-3571	Yanktown	2	14	22	6	28	6	1,096	92	29	1	1	4	2
	NEBRASKA													
24-3516	Beatrice	3	75	56	23	79	10	2,700	349	67	17	4	15	4
22-3439	Columbus	3	54	60	14	74	7	3,560	274	62	10	3	12	5
22-3516	Fremont	3	21	32	11	43	11	1,335	136	58	11	9	10	7
23-3416	Grand Island	2	97	85	28	113	18	8,452	461	95	30	14	32	17
23-3417	Hastings	4	162	148	28	177	15	12,933	772	95	40	9	30	11
23-3331	Kearney	2	46	39	14	53	9	3,021	198	47	17	3	12	6
23-3506	Lincoln	5	86	89	91	180	76	3,792	606	227	38	25	44	32
23-3631	Nebraska City	2	28	19	10	29	7	874	78	31	7	5	7	5
22-3416	Norfolk	2	53	116	11	127	11	11,706	361	59	13	3	16	6
23-3216	North Platte	2	38	29	12	41	12	6,075	117	34	9	4	8	7
23-3601	Omaha	10	206	218	300	518	214	7,833	1,921	1,098	173	132	172	139
22-2931	Scotts Bluff	4	158	84	26	109	8	19,550	470	25	43	2	39	5
	COLORADO													
25-2806	Colorado Springs	4	23	20	33	54	33	2,668	120	88	5	4	6	5
24-2801	Denver	6	295	202	323	525	288	42,176	2,035	1,012	120	55	118	77
23-2817	Fort Collins	2	34	16	17	33	11	1,840	134	78	10	6	11	9
23-2816	Greeley	3	36	38	12	50	12	2,413	254	53	28	3	12	6
26-2806	Pueblo	4	153	128	94	222	50	24,952	591	119	59	8	42	14
27-2816	Trinidad	3	46	24	12	36	12	4,809	82	54	6	1	3	2
	KANSAS													
27-3516	Arkansas City	4	43	33	23	56	14	1,878	166	36	37	27	15	8
25-3616	Atchison	3	15	11	13	24	13	412	95	90	21	21	13	12
27-3616	Chanute	3	13	12	10	22	10	522	50	32	8	7	12	11
27-3617	Coffeyville	4	41	43	44	86	16	2,518	192	61	58	40	20	10
27-3216	Dodge City	4	127	106	21	128	10	19,844	678	75	45	8	30	8
26-3516	Emporia	3	57	43	19	63	14	3,012	154	39	15	6	17	7
27-3716	Fort Scott	4	36	46	18	64	11	2,211	150	44	23	3	11	4
26-3406	Hutchinson	3	107	92	55	146	27	7,200	627	103	65	25	42	18
27-3616	Independence	See Coffeyville												
26-3631	Iola	3	28	22	12	34	7	1,242	69	30	9	2	6	3
25-3617	Lawrence	2	16	14	14	28	14	535	70	47	5	5	5	5
25-3716	Leavenworth	4	29	17	26	43	17	553	79	56	6	5	10	9
25-3516	Manhattan	3	61	55	25	80	10	3,266	236	41	13	2	12	2
26-3632	Ottawa	3	22	19	12	32	10	931	43	20	4	2	5	4
27-3619	Parsons	2	19	22	15	37	15	875	104	68	9	7	11	7
27-3717	Pittsburg	4	47	42	30	71	18	1,327	192	73	45	26	10	7
25-3416	Salina	5	217	230	56	286	20	19,341	1,060	94	94	22	62	18
25-3606	Topeka	5	84	86	69	155	64	3,819	404	211	32	24	35	27
27-3401	Wichita	5	179	136	155	292	111	10,090	1,005	381	172	94	108	72
TOTAL NORTH DAKOTA, WYOMING, SOUTH DAKOTA, NEBRASKA, COLORADO AND KANSAS		-	3,884	3,904	1,998	5,902	1,441	427,818	20,778	5,967	1,626	756	1,356	750
TOTAL WESTERN TRUNK LINE		-	7,861	8,727	6,867	15,594	4,965	650,076	43,290	13,871	4,405	2,604	4,119	2,634

Less than 500.

SECTION 10. TRADE AREA MARKETS

Analysis 10.12 Freight Traffic of Missouri, Arkansas and Oklahoma Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
				TRADE AREA										
NUMBER	TRADE CENTER	RAILROADS	COMMUNITIES	RURAL (000)	URBAN (000)	TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	MISSOURI													
27-4216	Cape Girardeau	6	84	94	28	121	16	4,494	162	42	12	6	15	7
27-3731	Carthage	2	13	22	10	32	10	771	73	41	7	5	6	5
27-3706	Joplin	6	57	102	68	170	33	4,149	337	104	20	9	22	13
27-3806	Springfield	2	129	336	75	411	58	17,272	549	166	29	19	46	21
	ARKANSAS													
29-4031	Batesville	1	9	42	4	47	4	46,649	19	11	3	2	3	3
32-3916	El Dorado	2	37	58	27	86	16	1,781	177	71	28	11	12	5
29-3731	Fayetteville	2	54	89	18	108	7	3,544	182	36	5	2	9	4
29-3706	Fort Smith	6	91	184	51	234	31	7,722	408	156	38	11	18	12
30-4131	Helena	4	16	45	15	59	8	1,314	105	83	10	6	14	12
31-3831	Hope	3	12	57	12	69	6	1,949	34	23	5	3	6	4
30-3816	Hot Springs	2	6	33	20	53	20	1,822	48	44	3	1	4	4
29-4116	Jonesboro	4	58	107	20	127	10	3,293	201	52	11	1	12	5
30-3901	Little Rock	4	126	227	133	360	101	8,535	528	251	57	32	51	36
29-4131	Paragould	3	85	133	17	150	6	2,527	259	24	12	2	20	2
31-3916	Pine Bluff	3	67	190	39	229	21	7,266	191	82	26	7	21	8
29-3831	Russellville	2	20	59	9	68	6	2,535	51	8	5	2	3	2
29-4032	Searcy	3	21	65	3	69	3	2,670	53	18	2	#	2	1
32-3706	Texarkana	5	49	164	42	206	27	6,443	215	88	33	19	23	18
	OKLAHOMA													
30-3516	Ada	4	21	31	13	44	11	1,253	69	42	14	8	9	7
30-3231	Altus	3	55	122	38	160	8	5,724	295	39	24	4	19	5
31-3516	Ardmore	3	36	63	25	88	16	2,846	138	47	20	11	12	7
28-3616	Bartlesville	3	8	11	20	31	15	287	67	43	6	3	7	4
30-3416	Chickasha	3	29	76	19	95	14	2,272	173	82	13	6	15	13
29-3431	El Reno	4	74	109	25	134	9	5,713	360	24	24	4	19	5
28-3406	Enid	4	95	118	39	157	26	9,854	564	124	55	35	34	23
29-3432	Guthrie	4	31	38	21	59	10	1,445	121	25	4	1	5	1
30-3316	Lawton	2	23	54	29	83	12	2,623	119	42	13	1	8	3
30-3616	Mc Alester	4	35	59	15	75	12	2,931	97	53	13	7	12	7
28-3731	Miami	2	7	12	11	22	8	334	38	30	1	#	2	2
29-3606	Muskogee	4	32	84	42	126	32	2,689	191	115	19	12	14	11
29-3401	Oklahoma City	4	60	129	218	347	185	3,749	752	545	103	71	67	52
29-3616	Okmulgee	3	29	57	29	86	17	1,320	124	47	18	9	8	3
28-3516	Ponca City	3	38	28	31	59	16	1,756	110	29	43	26	14	9
29-3516	Shawnee	5	33	105	61	166	23	1,742	232	73	24	3	8	3
28-3601	Tulsa	5	102	183	198	381	141	6,638	618	266	91	36	53	28
TOTAL MISSOURI, ARKANSAS AND OKLAHOMA		-	1,642	3,286	1,423	4,709	943	177,912	7,660	2,926	790	377	592	345

Less than 500.

SECTION 10. TRADE AREA MARKETS

Analysis 10.13 Freight Traffic of Texas, West Louisiana and New Mexico Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
				TRADE AREA										
NUMBER	TRADE CENTER	RAILROADS	COMMUNITIES	RURAL (000)	URBAN (000)	TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	TEXAS													
33-3216	Abilene	3	60	117	53	170	23	9,818	293	77	42	6	26	7
29-3006	Amarillo	3	222	142	94	236	43	34,560	773	126	87	24	48	20
35-3406	Austin	3	64	108	67	175	53	5,507	274	92	23	5	30	14
35-3706	Beaumont	4	101	73	130	204	58	4,920	273	139	54	24	59	27
33-3016	Big Spring	1	13	38	29	67	14	10,187	99	32	13	9	10	4
35-3537	Brenham	1	18	44	6	50	6	1,654	77	22	4	1	5	4
40-3416	Brownsville	2	102	89	87	176	22	4,317	268	54	27	1	23	4
34-3316	Brownwood	4	28	63	28	91	13	5,605	120	39	11	2	8	3
35-3531	Bryan	2	60	45	11	56	8	1,708	56	7	9	1	12	5
33-3416	Cleburne	4	18	42	12	53	12	1,604	54	18	3	2	4	2
38-3406	Corpus Christi	3	78	93	54	146	28	9,132	338	97	29	7	31	10
33-3516	Corsicana	3	22	64	19	83	15	1,942	81	51	14	12	9	7
32-3501	Dallas	3	109	246	321	567	260	6,329	1,065	641	136	105	96	69
31-3517	Denison	5	18	47	21	68	14	1,793	80	32	7	3	8	5
33-2501	El Paso	3	144	112	128	241	102	57,699	535	312	29	13	31	17
32-3401	Fort Worth	5	78	149	214	363	163	9,555	540	284	100	81	71	56
36-3706	Galveston	5	17	8	56	64	53	395	67	56	12	10	46	34
32-3516	Greenville	1	22	72	22	94	12	2,196	157	70	9	4	14	8
36-3601	Houston	3	255	347	340	688	292	17,562	992	512	171	100	245	174
38-3206	Laredo	2	17	17	33	50	33	5,399	118	88	10	8	9	8
31-3016	Lubbock	2	75	106	39	145	21	11,056	312	83	31	9	23	11
33-3716	Marshall	3	26	124	26	151	16	3,624	214	48	30	6	33	8
34-3616	Palestine	4	57	101	26	128	11	4,319	90	35	6	13	22	8
31-3616	Paris	3	53	145	34	179	16	5,814	173	44	14	2	15	4
34-3106	San Angelo	1	44	63	35	98	25	16,513	208	65	21	4	17	7
36-3301	San Antonio	4	259	380	334	714	232	37,276	869	328	107	40	98	46
31-3518	Sherman	2	25	59	30	89	16	1,938	155	63	25	14	23	13
34-3451	Temple	4	32	76	26	103	15	3,108	121	51	11	6	13	8
33-3616	Tyler	4	23	70	23	94	17	2,120	62	42	21	10	20	9
34-3406	Waco	6	65	164	78	242	53	5,413	366	123	29	15	29	17
31-3306	Wichita Falls	5	92	178	101	279	44	14,654	441	102	62	22	32	12
	LOUISIANA													
34-3916	Alexandria	6	94	169	40	209	23	6,438	274	76	43	14	26	14
35-3816	Lake Charles	5	96	126	49	175	16	7,566	346	52	15	5	28	14
33-3906	Monroe	3	81	137	46	183	26	4,726	210	67	36	17	40	14
33-3806	Shreveport	7	130	323	110	433	77	10,756	551	216	104	72	59	35
	NEW MEXICO													
29-2606	Albuquerque	1	55	62	27	89	27	20,457	114	47	8	7	15	13
29-2731	Las Vegas	3	39	32	9	41	9	9,779	61	18	2	1	3	2
27-2879	Raton	3	52	22	9	30	6	7,675	89	19	8	2	5	3
31-2716	Roswel	2	29	24	17	42	11	14,665	100	32	9	2	7	3
28-2616	Santa Fe	2	26	40	11	51	11	8,845	44	25	4	#	3	2
TOTAL TEXAS, WEST LOUISIANA AND NEW MEXICO		-	2,799	4,321	2,796	7,117	1,895	388,624	11,060	4,285	1,376	679	1,299	718
TOTAL SOUTHWESTERN		-	4,441	7,607	4,219	11,826	2,838	566,536	18,720	7,211	2,167	1,056	1,891	1,063

Less than 500.

Analysis 10.14 Freight Traffic of Pacific Northwest Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	TRADE AREA RURAL (000)	TRADE AREA URBAN (000)	TRADE AREA TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	WASHINGTON													
12-1416	Aberdeen	3	22	30	41	71	22	2,674	235	142	9	3	8	4
11-1606	Bellingham	3	17	54	44	97	31	4,034	117	72	10	7	11	9
12-1606	Everett	3	9	51	33	84	31	2,272	97	70	11	10	14	13
13-1516	Olympia	4	34	52	28	80	12	3,771	157	47	9	2	15	7
12-1501	Seattle	4	44	123	401	524	366	7,135	1,222	1,122	66	49	73	63
13-1901	Spokane	7	118	150	133	284	116	22,288	974	287	66	38	53	39
12-1502	Tacoma	4	36	55	118	173	107	1,980	459	342	56	24	52	43
15-1816	Walla-Walla	3	54	23	22	45	16	3,969	406	83	13	3	12	4
13-1716	Wenatchee	1	1	45	14	60	12	10,806	75	75	8	8	3	3
14-1716	Yakima	3	61	71	29	101	22	8,793	431	124	41	13	19	11
	OREGON													
13-1416	Astoria	2	4	17	12	29	10	1,178	43	29	1	1	15	2
16-1831	Baker	1	4	13	8	21	8	6,989	41	24	3	2	2	2
16-1531	Bend	2	4	12	9	20	9	7,778	44	24	7	7	3	2
16-1416	Eugene	2	95	76	38	114	19	13,721	203	51	17	4	10	5
18-1416	Klamath Falls	2	45	37	16	53	16	19,619	138	69	17	8	8	5
16-1834	La Grande	1	9	17	8	25	8	5,176	55	25	5	3	3	3
18-1316	Medford	1	47	39	23	62	11	8,810	107	35	17	3	12	2
15-1838	Pendleton	2	18	18	7	25	7	4,587	93	42	6	4	5	4
14-1401	Portland	5	129	196	363	558	302	9,844	754	410	104	61	93	67
15-1406	Salem	2	85	71	47	117	26	4,655	238	71	29	1	24	9
15-1631	The Dalles	2	19	26	6	32	6	7,909	117	21	6	2	3	2
	IDAHO													
19-2232	Blackfoot	1	9	19	3	22	3	6,692	110	30	9	3	5	3
18-1916	Boise	2	41	86	45	132	22	47,147	365	89	27	5	23	6
19-2235	Idaho Falls	1	21	39	15	54	9	10,364	238	65	20	9	12	6
15-1931	Lewiston	2	27	46	17	63	9	14,414	167	40	10	4	10	7
19-2216	Pocatello	1	16	36	21	57	16	9,698	195	58	25	15	21	14
19-2031	Twin Falls	1	27	63	13	76	9	11,709	274	61	27	4	18	7
14-2031	Wallace	3	15	11	8	19	4	2,597	113	32	6	1	7	3
	MONTANA													
17-2616	Billings	4	153	96	35	132	16	46,577	611	134	46	11	35	18
16-2431	Bozeman	2	75	16	13	30	8	11,685	186	52	7	3	9	3
16-2306	Butte	4	49	36	56	92	40	10,281	253	130	16	13	17	14
17-2231	Dillon	1	5	7	2	9	2	7,956	24	22	1	#	1	1
14-2406	Great Falls	2	28	41	29	70	29	12,581	199	130	13	11	12	11
13-2531	Havre	1	1	36	9	44	6	18,761	27	27	2	2	4	4
15-2316	Helena	2	13	10	12	22	12	5,143	56	47	3	3	5	4
13-2231	Kalispell	1	1	19	9	28	6	9,966	12	12	#	#	#	#
15-2567	Lewistown	2	52	31	5	37	5	16,742	202	38	7	2	5	3
15-2216	Missoula	3	66	34	15	49	15	10,591	205	81	12	5	16	11
	WYOMING													
20-2716	Casper	2	48	27	27	54	17	28,268	219	79	47	34	11	8
18-2731	Sheridan	1	41	25	9	33	9	13,902	84	14	13	3	7	5
TOTAL PACIFIC NORTHWEST		-	1,543	1,853	1,740	3,593	1,390	453,062	9,546	4,306	791	381	655	427

Less than 500.

Analysis 10.15 Freight Traffic of Pacific Southwest Trade Areas - 1932

TRADE AREA		NUMBER OF		POPULATION				TRADE AREA	ON TRACK INDUSTRIES		CARS ORIGINATED		CARS TERMINATED	
NUMBER	TRADE CENTER	RAIL-ROADS	COM-MUN-ITIES	TRADE AREA RURAL (000)	TRADE AREA URBAN (000)	TRADE AREA TOTAL (000)	TRADE CENTER (000)	SQUARE MILES	TRADE AREA	TRADE CENTER	TRADE AREA (000)	TRADE CENTER (000)	TRADE AREA (000)	TRADE CENTER (000)
	CALIFORNIA													
26-1406	Bakersfield	2	86	53	32	85	26	8,246	244	47	25	3	8	4
21-1331	Chico	2	61	51	21	73	8	9,818	136	14	10	1	7	2
30-1737	El Centro	1	40	41	30	71	8	8,084	192	62	34	10	8	2
19-1216	Eureka	1	47	35	16	51	16	7,695	69	38	7	2	4	2
25-1406	Fresno	2	233	180	111	291	53	16,693	1,158	197	68	23	43	20
21-1364	Marysville	2	27	26	13	39	6	2,725	75	19	6	1	4	1
22-1306	Sacramento	1	113	92	110	202	94	5,773	428	158	53	23	40	28
28-1509	San Bernardino	4	142	86	102	188	37	27,196	367	37	40	5	41	5
30-1501	San Diego	2	49	36	174	210	148	4,221	215	119	8	3	13	9
27-1306	Santa Barbara	1	69	61	83	144	34	7,746	192	36	22	1	12	2
24-1216	Santa Cruz	1	44	41	50	91	14	3,765	255	17	29	1	21	2
22-1217	Santa Rosa	2	102	66	27	93	11	6,359	165	34	12	2	13	3
23-1306	Stockton	3	89	117	77	194	48	7,315	427	125	44	15	39	22
	Los Angeles Multiple Market	-	145	342	2,018	2,360	1,238	5,298	1,626	871	141	86	177	148
28-1402	Long Beach	2	5	6	152	158	142	206	37	19	3	1	4	3
28-1401	Los Angeles	6	55	214	1,579	1,794	1,238	3,684	1,115	871	102	86	156	148
28-1406	Pasadena	2	45	71	218	289	76	613	312	44	19	#	11	3
28-1410	Santa Ana	3	40	50	69	119	30	795	162	34	18	1	6	1
	San Francisco Multiple Market	-	157	208	1,318	1,526	634	6,378	1,906	761	288	86	263	92
23-1202	Oakland	2	35	56	466	521	284	875	701	505	124	67	103	76
23-1201	San Francisco	4	42	45	724	769	634	1,084	849	761	92	86	103	92
23-1206	San Jose	2	35	56	85	141	58	2,654	251	143	25	17	36	25
22-1216	Vallejo	2	45	51	44	95	14	1,765	105	6	47	4	21	3
	NEVADA													
21-1931	Elko	5	19	8	3	11	3	21,216	49	29	2	1	4	3
26-1831	Las Vegas	1	33	19	13	32	5	37,667	106	24	11	1	14	3
22-1516	Reno	8	113	55	25	80	19	51,812	170	54	30	7	28	10
24-1731	Tonopah*	3	18	10	2	12	2	31,698	26	26	2	-	#	-
	UTAH													
21-2248	Logan	1	13	21	16	37	10	1,720	73	14	5	1	5	2
21-2206	Ogden	3	44	30	48	78	40	7,820	158	61	25	18	27	19
22-2216	Provo	4	18	39	32	71	15	7,998	97	30	62	4	12	8
22-2201	Salt Lake City	6	50	146	189	335	140	59,276	568	298	51	30	76	48
	ARIZONA													
33-2231	Douglas	1	31	19	22	41	10	6,170	78	21	10	2	12	8
30-2133	Globe	1	26	29	22	51	7	11,207	46	8	3	1	4	1
33-2131	Nogales	1	12	4	6	10	6	1,229	29	25	2	1	2	2
30-2006	Phoenix	2	78	114	71	185	48	21,214	317	162	21	6	27	12
29-2031	Prescott	1	81	23	20	43	6	26,773	134	31	8	#	12	2
32-2106	Tucson	1	7	19	33	51	33	8,554	62	62	4	4	7	7
	WYOMING													
22-2731	Laramie	2	6	3	9	12	9	4,399	31	24	8	5	5	5
21-2431	Rock Springs	1	13	14	16	30	8	19,352	139	36	33	13	14	4
	COLORADO													
24-2716	Boulder	3	25	15	17	32	11	1,553	98	33	11	#	7	1
26-2531	Durango	2	9	47	5	53	5	22,777	40	20	4	#	3	1
24-2416	Grand Junction	2	30	63	17	80	10	24,449	180	32	27	3	13	5
	NEW MEXICO													
28-2431	Gallup	1	34	50	10	60	6	26,784	82	30	10	7	6	3
31-2431	Silver City	2	13	16	4	19	4	10,625	31	16	27	#	26	1
TOTAL PACIFIC SOUTHWEST		-	2,077	2,179	4,763	6,942	3,376	531,605	9,969	4,322	1,145	458	995	599

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* Originated and Terminated Cars.and Industries for Trade Center not shown - not served by Class I Railroad.

Less than 500.

SECTION 12. FLOW OF LOCAL TRAFFIC

Analysis 12.1 Relation of Single to Multiple Carrier Carload Traffic - 1932

PERCENTAGE OF SINGLE CARRIER (LOCAL) TO TOTAL TRAFFIC

	CAR MILES					REVENUE				
	UNITED STATES	EASTERN	POCAHONTAS	SOUTHERN	WESTERN	UNITED STATES	EASTERN	POCAHONTAS	SOUTHERN	WESTERN
ALL COMMODITIES	23%	21%	30%	20%	24%	31%	29%	36%	28%	34%
I ROUGH MATERIAL	53	51	55	50	57	61	57	75	61	64
Sand, Stone and Gravel	53	51	55	50	57	61	57	75	61	64
II RAW MATERIAL	24	20	34	19	26	33	29	38	26	38
Bulk Grain and Beets	54	37	24	32	64	66	50	29	45	74
Perishables	7	7	2	8	6	10	11	3	9	9
Live Animals	45	27	15	38	55	52	32	19	42	62
Coal and Coke	28	23	37	24	28	33	30	40	31	36
Ores	26	23	21	9	39	36	31	33	19	48
Sulphur and Sulphuric Acid	41	30	42	55	31	53	47	52	61	47
Forest Products	17	11	9	18	19	25	18	16	26	27
III SEMIPROCESSED MATERIAL	24	15	16	21	35	28	19	23	28	38
Cotton, Hay and Tobacco	32	12	14	24	47	38	17	23	34	48
Paper and Products	15	16	18	14	15	20	19	24	16	22
IV NECESSARIES	21	19	10	20	24	27	24	14	27	31
Cereals	24	20	14	19	29	27	24	18	19	34
Miscellaneous Farm Products	24	25	12	31	20	32	34	21	40	28
Edible Animal Products	16	14	7	13	20	19	16	9	14	26
Oils - Vegetable and Animal	26	16	6	27	30	42	22	9	46	47
Manufactured Food	22	24	6	14	23	30	31	11	21	32
Textiles and Leather	13	14	*	11	22	19	18	2	18	26
V AUXILIARIES	22	26	14	21	20	31	33	23	31	29
Petroleum and Products	20	26	27	26	17	32	36	40	39	27
Building Materials	26	21	18	18	35	34	28	28	27	45
Chemicals	16	17	5	15	17	18	17	7	19	18
Miscellaneous	24	26	9	16	25	30	33	14	19	29
VI ACCESSORIES	18	23	9	11	13	25	32	17	16	17
Iron and Steel	25	30	13	17	16	34	40	21	21	21
Other Metals	11	15	3	5	10	16	18	4	5	16
Appliances	14	16	6	7	12	16	19	10	11	14
Glass and Tile	23	27	12	12	17	26	30	20	14	19

PERCENTAGE OF MULTIPLE CARRIER TO TOTAL CARLOAD TRAFFIC - 1932

	CAR MILES					REVENUE				
	UNITED STATES	EASTERN	POCAHONTAS	SOUTHERN	WESTERN	UNITED STATES	EASTERN	POCAHONTAS	SOUTHERN	WESTERN
ALL COMMODITIES	77%	79%	70%	80%	76%	69%	71%	64%	72%	66%
I ROUGH MATERIAL	47	49	45	50	43	39	43	25	39	36
Sand, Stone and Gravel	47	49	45	50	43	39	43	25	39	36
II RAW MATERIAL	76	80	66	81	74	67	71	62	74	62
Bulk Grain and Beets	46	63	76	68	36	34	50	71	55	26
Perishables	93	93	98	92	94	90	89	97	91	91
Live Animals	55	73	85	62	45	48	68	81	58	38
Coal and Coke	72	77	63	76	72	67	70	60	69	64
Ores	74	77	79	91	61	64	69	67	81	52
Sulphur and Sulphuric Acid	59	70	58	45	69	47	53	48	39	53
Forest Products	83	89	91	82	81	75	82	84	74	73
III SEMIPROCESSED MATERIAL	76	85	84	79	65	72	81	77	72	62
Cotton, Hay and Tobacco	68	88	86	76	53	62	83	77	66	52
Paper and Products	85	84	82	86	85	80	81	76	84	78
IV NECESSARIES	79	81	90	80	76	73	76	86	73	69
Cereals	76	80	86	81	71	73	76	82	81	66
Miscellaneous Farm Products	76	75	88	69	80	68	66	79	60	72
Edible Animal Products	84	86	93	87	80	81	84	91	86	74
Oils - Vegetable and Animal	74	84	94	73	70	58	78	91	54	53
Manufactured Food	78	76	94	86	77	70	69	89	79	68
Textiles and Leather	87	86	100	89	78	81	82	98	82	74
V AUXILIARIES	78	74	86	79	80	69	67	77	69	71
Petroleum and Products	80	74	73	74	83	68	64	60	61	73
Building Materials	74	79	82	82	65	66	72	72	73	55
Chemicals	84	83	95	85	83	82	83	93	81	82
Miscellaneous	76	74	91	84	75	70	67	86	81	71
VI ACCESSORIES	82	77	91	89	87	75	68	83	84	83
Iron and Steel	75	70	87	83	84	66	60	79	79	79
Other Metals	89	85	97	95	90	84	82	96	95	84
Appliances	86	84	94	93	88	84	81	90	89	86
Glass and Tile	77	73	88	88	83	74	70	80	86	81

* Less than half of one per cent.

SECTION 13. FLOW OF INTERCARRIER TRAFFIC

Analysis 13.1 Analysis of Multiple Carrier Carload Traffic - 1932

PERCENTAGE OF INTERLINE ORIGINATED OR TERMINATED TO TOTAL TRAFFIC

	CAR MILES					REVENUE				
	UNITED STATES	EASTERN	POCAHONTAS	SOUTHERN	WESTERN	UNITED STATES	EASTERN	POCAHONTAS	SOUTHERN	WESTERN
ALL COMMODITIES	55%	57%	57%	56%	53%	55%	57%	55%	56%	52%
I ROUGH MATERIAL	38	37	29	39	38	35	38	19	34	33
Sand, Stone and Gravel	38	37	29	39	38	35	38	19	34	33
II RAW MATERIAL	54	57	57	59	48	54	57	55	59	48
Bulk Grain and Beets	39	51	57	54	32	30	44	55	47	24
Perishables	55	64	31	58	52	62	67	38	66	59
Live Animals	45	57	68	48	38	41	57	63	46	34
Coal and Coke	57	56	58	66	56	57	56	55	62	59
Ores	52	60	44	47	44	51	58	44	49	42
Sulphur & Sulphuric Acid	41	54	52	35	42	39	47	45	32	40
Forest Products	55	56	45	53	53	55	59	51	55	54
III SEMIPROCESSED MATERIAL	54	58	59	54	49	56	62	57	55	50
Cotton, Hay and Tobacco	51	59	59	54	46	51	65	57	52	46
Paper and Products	56	58	58	55	53	60	62	58	61	55
IV NECESSARIES	57	56	54	53	60	56	57	59	53	56
Cereals	59	57	61	57	60	58	59	64	60	55
Miscellaneous Farm Products	54	56	40	46	56	52	54	43	45	55
Edible Animal Products	58	54	70	57	66	60	58	75	59	62
Oils - Vegetable and Animal	52	52	45	50	52	46	56	52	43	43
Manufactured Food	57	56	52	50	59	55	56	57	53	56
Textiles and Leather	57	64	38	54	61	61	67	49	57	60
V AUXILIARIES	59	58	59	57	61	58	57	60	55	59
Petroleum and Products	62	60	62	57	63	58	56	54	51	61
Building Materials	61	65	70	62	55	58	63	65	61	50
Chemicals	59	58	59	55	64	64	64	62	58	68
Miscellaneous	56	56	57	56	55	56	55	62	59	57
VI ACCESSORIES	59	59	65	54	59	59	57	66	57	63
Iron and Steel	57	56	68	56	58	55	52	67	58	62
Other Metals	58	61	51	34	57	59	66	61	46	56
Appliances	60	61	59	51	60	64	65	62	57	64
Glass and Tile	60	58	77	57	61	62	60	73	61	63

PERCENTAGE OF INTERMEDIATE OR OVER HEAD TO TOTAL TRAFFIC

	CAR MILES					REVENUE				
	UNITED STATES	EASTERN	POCAHONTAS	SOUTHERN	WESTERN	UNITED STATES	EASTERN	POCAHONTAS	SOUTHERN	WESTERN
ALL COMMODITIES	22%	22%	13%	24%	23%	14%	14%	9%	16%	14%
I ROUGH MATERIAL	9	12	16	11	5	4	5	6	5	3
Sand, Stone and Gravel	9	12	16	11	5	4	5	6	5	3
II RAW MATERIAL	22	23	9	22	26	13	14	7	15	14
Bulk Grain and Beets	7	12	19	14	4	4	6	16	8	2
Perishables	38	29	67	34	42	28	22	59	25	32
Live Animals	10	16	17	14	7	7	11	18	12	4
Coal and Coke	15	21	5	10	16	10	14	5	7	5
Ores	22	17	35	44	17	13	11	23	32	10
Sulphur and Sulphuric Acid	18	16	6	10	27	8	6	3	7	13
Forest Products	28	33	46	29	28	20	23	33	19	19
III SEMIPROCESSED MATERIAL	22	27	25	25	16	16	19	20	17	12
Cotton, Hay and Tobacco	17	29	27	22	7	11	18	20	14	6
Paper and Products	29	26	24	31	32	20	19	18	23	23
IV NECESSARIES	22	25	36	27	16	17	19	27	20	13
Cereals	17	23	25	24	11	15	17	18	21	11
Miscellaneous Farm Products	22	19	48	23	24	16	12	36	15	17
Edible Animal Products	26	32	23	30	14	21	26	16	27	12
Oils - Vegetable and Animal	22	32	49	23	18	12	22	39	11	10
Manufactured Food	21	20	42	36	18	15	13	32	26	12
Textiles and Leather	30	22	62	35	17	20	15	49	25	14
V AUXILIARIES	19	16	27	22	19	11	10	17	14	12
Petroleum and Products	18	14	11	17	20	10	8	6	10	12
Building Materials	13	14	12	20	10	8	9	7	12	5
Chemicals	25	25	36	30	19	18	19	31	23	14
Miscellaneous	20	18	34	28	20	14	12	24	22	14
VI ACCESSORIES	23	18	26	35	28	16	11	17	27	20
Iron and Steel	18	14	19	27	26	11	8	12	21	17
Other Metals	31	24	46	61	33	25	16	35	49	28
Appliances	26	23	35	42	28	20	16	28	32	22
Glass and Tile	17	15	11	31	22	12	10	7	25	18

Analysis 14.1 Intraterritorial Interchange of Rail Cars by Eastern and Southern Railways

RAILWAY GROUPS JUNCTIONS	LOADED CARS (000)	EMPTY CARS (000)
EASTERN AND SOUTHERN		
All Junctions	16,326	13,635
NEW ENGLAND		
All New England	803	528
Portland	123	86
Other Maine	69	55
New Hampshire	15	11
Vermont	190	93
Boston	70	59
Other Massachusetts	291	190
Rhode Island	6	2
Connecticut	28	24
New York City	3	1
Other New York	9	5
CENTRAL EAST AND POCAHONTAS		
All Trunk Line	5,683	4,762
New York City	802	584
Buffalo	904	708
Other New York	674	602
New Jersey	153	147
Philadelphia	266	197
Pittsburgh	334	300
Other Pennsylvania	2,323	1,996
Delaware	17	24
Baltimore	83	88
Other Maryland	86	77
Washington	41	41
All Pocahontas	582	563
Norfolk	47	40
Other Virginia	27	45
West Virginia	508	478
All Central	7,040	5,932
Cincinnati	273	182
Cleveland	249	251
Columbus	370	351
Toledo	561	487
Other Ohio	1,180	999
Indianapolis	152	121
Other Indiana	298	270
Detroit	286	291
Other Michigan	175	170
Wisconsin	14	9
Chicago - Total	2,971	2,267
Road-to-Road	167	197
Road-to-Terminal	1,840	1,827
Terminal-to-Terminal	964	243
Peoria	32	40
Other Illinois	143	141
St.Louis - Total	336	353
Road-to-Road	26	47
Road-to-Terminal	306	304
Terminal-to-Terminal	4	2
All Southeastern	10	9
Louisville	10	9
All Western	23	25
Des Moines	9	14
Kansas City	9	7
Other Missouri	2	2
Omaha	3	2
All Canadian	5	5
East Canada	5	5
LAKE GULF		
All Central	556	456
Indianapolis	5	4
Other Indiana	26	23
Chicago - Total	255	166
Road-to-Terminal	255	166
Peoria	24	24
Other Illinois	43	44
St.Louis - Total	203	195
Road-to-Road	3	3
Road-to-Terminal	200	192
All Southeastern	239	203
Louisville	33	30
Other Kentucky	8	6
Memphis	15	15
Other Tennessee	23	17
Birmingham	23	21
Montgomery	3	2
Other Alabama	29	27
Meridian	6	6
Other Mississippi	38	25
New Orleans	58	53
Other Louisiana	1	1
All Western	14	8
Sioux City	8	5
Omaha	6	3
SOUTHEASTERN		
All Trunk Line	3	3
Washington	3	3
All Central	48	45
Indiana	8	7
St.Louis - Total	40	38
Road-to-Terminal	40	38
All Pocahontas	219	207
Norfolk	32	34
Richmond	127	116
Other Virginia	60	57
All Southeastern	1,101	889
Louisville	10	12
Other Kentucky	14	13
Charlotte	27	22
Wilmington	5	6
Other North Carolina	179	119
Charleston	20	23
Columbia	22	18
Other South Carolina	141	100
Chattanooga	36	28
Nashville	7	6
Memphis	16	13
Other Tennessee	46	35
Atlanta	119	90
Savannah	28	32
Albany	20	18
Other Georgia	211	162
Jacksonville	66	71
Other Florida	33	37
Birmingham	22	21
Montgomery	9	10
Other Alabama	43	32
Mississippi	16	12
New Orleans	12	10

Analysis 14.2 Intraterritorial Interchange of Rail Cars by Western Railways

RAILWAY GROUPS JUNCTIONS	LOADED CARS (000)	EMPTY CARS (000)
WESTERN		
All Junctions	6,734	6,365
NORTHWESTERN		
All Western Trunk Line	3,143	3,027
Michigan	44	36
Milwaukee	28	27
Other Wisconsin	225	713
Chicago - Total	1,392	969
Road-to-Road	61	56
Road-to-Terminal	1,324	911
Terminal-to-Terminal	7	2
Peoria	15	14
Other Illinois	33	31
Duluth	91	90
Minneapolis-St.Paul	462	388
Other Minnesota	129	105
Clinton	11	13
Quad Cities	11	10
Des Moines	39	37
Dubuque	3	3
Sioux City	103	95
Other Iowa	97	89
St.Louis - Total	27	37
Road-to-Terminal	27	37
St.Joseph	27	27
Kansas City	29	19
Other Missouri	10	9
North Dakota	26	30
Sioux Falls	3	3
Other South Dakota	20	22
Omaha	236	183
Other Nebraska	36	37
Kansas	1	1
Denver	41	35
Other Colorado	2	2
All Pacific Northwest	287	261
Montana	74	69
Idaho	7	7
Wyoming	11	13
Seattle	41	44
Spokane	47	31
Tacoma	9	9
Other Washington	68	54
Portland	17	22
Other Oregon	7	6
Utah	6	7
All Pacific Southwest	4	2
Los Angeles	2	1
Other California	2	1
ALL RAILWAYS		
All Junctions	23,060	20,000
SOUTHWESTERN		
All Western Trunk Line	253	229
Chicago - Total	202	171
Road-to-Road	6	12
Road-to-Terminal	196	159
Peoria	8	8
Other Illinois	14	15
Minneapolis-St.Paul	2	1
Quad Cities	3	2
Des Moines	6	8
Other Iowa	11	10
Omaha	13	20
Other Nebraska	2	2
All Southwestern	2,368	2,252
St.Louis - Total	112	164
Road-to-Road	15	24
Road-to-Terminal	96	139
Terminal-to-Terminal	1	1
St.Joseph	20	19
Kansas City	234	206
Other Missouri	56	50
Kansas	184	181
Denver	5	6
Pueblo	73	53
Other Colorado	71	62
Texarkana	100	81
Other Arkansas	101	106
Shreveport	83	75
Alexandria	21	19
Other Louisiana	93	93
Tulsa	32	33
Oklahoma City	58	61
Other Oklahoma	213	189
Dallas	52	47
Dennison	46	32
El Paso	82	67
Fort Worth	194	178
Houston-Galveston	100	122
San Antonio	21	35
Other Texas	411	364
All Southeastern	65	63
Memphis	23	24
Birmingham	3	2
New Orleans	39	37
All Pacific Southwest	614	531
Ogden-Salt Lake City	66	48
Other Utah	20	19
Arizona	9	9
New Mexico	91	69
Nevada	10	8
San Francisco	136	119
Los Angeles	107	113
Other California	176	147

Analysis 15.1 Interterritorial Interchange of Rail Cars by Junctions - 1932

GATEWAY JUNCTION	LOADED CARS TOTAL (000)	NORTH (000)	SOUTH (000)	EAST (000)	WEST (000)	EMPTY CARS TOTAL (000)	NORTH (000)	SOUTH (000)	EAST (000)	WEST (000)
ALL GATEWAYS										
All Junctions	7,396	1,963	1,237	2,660	1,534	6,220	999	1,726	1,221	2,274
HUDSON RIVER										
All Hudson River	1,138	44	43	767	285	749	26	23	111	589
New York City	291	-	-	201	89	181	-	-	34	147
Albany - Troy	503	-	-	375	128	322	-	-	42	280
TRANSEAST										
All Transeast	879	625	218	20	16	792	188	571	16	17
Washington	255	182	73	-	-	200	50	151	-	-
Norfolk	51	35	16	-	-	44	13	32	-	-
Cincinnati	362	294	68	-	-	349	62	287	-	-
Louisville	129	84	45	-	-	114	42	72	-	-
Evansville	44	29	15	-	-	48	20	28	-	-
TRANSCONTINENT										
All Transcontinent	2,347	196	155	1,233	762	2,101	125	181	697	1,098
Chicago	1,093	122	85	533	353	1,017	68	105	337	507
St. Louis	595	48	45	326	176	515	35	51	160	269
Memphis	149	-	-	98	51	138	-	-	48	90
New Orleans	90	-	-	49	41	91	-	-	39	52
TRANSWEST										
All Transwest	867	485	247	103	34	754	194	431	33	96
Kansas City	471	265	123	66	18	418	102	231	17	68
Omaha	119	42	24	37	16	106	21	40	16	28
Denver	62	35	27	-	-	53	22	32	-	-
Ogden-Salt Lake	158	114	44	-	-	127	28	99	-	-
Portland	39	20	20	-	-	30	15	15	-	-
NEW ENGLAND INTERIOR	72	25	40	4	2	52	32	14	2	4
CENTRAL EAST INTERIOR	721	279	186	119	137	592	137	234	116	104
SOUTHEAST INTERIOR	855	116	167	343	228	703	134	82	187	300
NORTHWEST INTERIOR	294	92	103	44	54	268	93	90	42	44
SOUTHWEST INTERIOR	182	80	58	27	16	170	53	78	17	22
CANADIAN INTERIOR	41	21	20	-	-	39	17	22	-	-

Analysis 15.2 Interterritorial Interchange of Rail Cars by Eastern Railways - 1932

CARRIERS JUNCTIONS	LOADED CARS TOTAL (000)	NORTH OR EAST (000)	SOUTH OR WEST (000)	EMPTY CARS TOTAL (000)	NORTH OR EAST (000)	SOUTH OR WEST (000)
CENTRAL EAST - NEW ENGLAND - ALL	1,095	794	301	732	120	611
Hudson River Gateways - All	1,052	767	285	700	111	589
New York	291	201	89	181	34	147
Albany-Troy	503	375	128	322	42	280
New England Interior	7	4	2	6	2	4
Central East Interior	37	23	14	26	7	19
CENTRAL EAST - SOUTHEAST - ALL	707	408	299	583	239	344
Transeast Gateways - All	407	279	127	343	99	244
Washington	255	182	73	200	50	151
Norfolk	51	35	16	44	13	32
Cincinnati	89	54	35	89	33	56
Louisville	12	8	4	9	3	6
Transcontinent Gateways - All	13	5	8	14	7	7
St. Louis	13	5	8	14	7	7
Central East Interior	22	18	3	19	2	16
Southeast Interior	266	106	160	208	131	76
CENTRAL EAST - LAKE GULF - ALL	785	553	232	706	205	501
Transeast Gateways - All	436	346	90	416	90	326
Cincinnati	273	240	33	261	30	231
Louisville	118	76	42	105	39	66
Evansville	44	29	15	48	20	28
Transcontinent Gateways - All	242	140	102	193	81	113
Chicago	164	97	67	126	54	73
St. Louis	61	34	27	51	19	31
Central East Interior	90	57	32	87	31	56
Southeast Interior	17	10	7	9	3	6
CENTRAL EAST - NORTHWEST - ALL	1,030	570	460	956	439	517
Transcontinent Gateways - All	854	479	375	802	367	434
Chicago	622	354	268	592	264	328
St. Louis	42	19	23	60	38	22
Transwest Gateways - All	24	17	7	29	9	21
Kansas City	16	12	4	21	4	17
Omaha	8	5	3	8	5	4
Central East Interior	122	59	63	106	53	53
Northwest Interior	30	15	15	19	10	9
CENTRAL EAST - SOUTHWEST - ALL	703	485	218	591	173	418
Transcontinent Gateways - All	601	414	187	503	150	354
Chicago	173	116	57	173	51	122
St. Louis	356	247	109	270	78	192
Transwest Gateways - All	67	54	13	64	13	51
Kansas City	67	54	13	64	13	51
Central East Interior	21	14	7	14	6	9
Northwest Interior	14	3	10	10	5	5
CENTRAL EAST - CANADIAN - ALL	357	208	150	276	104	171
Hudson River Gateways	20	10	11	18	9	9
Central East Interior	317	183	134	238	90	147
Canadian Interior	20	15	5	20	5	15
NEW ENGLAND - CANADIAN - ALL	131	59	73	77	49	28
Hudson River Gateways	66	34	32	31	17	14
New England Interior	65	25	40	46	32	14

Analysis 15.3 Interterritorial Interchange of Rail Cars by Southern and Western Railways - 1932

CARRIERS JUNCTIONS	LOADED CARS TOTAL (000)	LOADED CARS NORTH OR EAST (000)	LOADED CARS SOUTH OR WEST (000)	EMPTY CARS TOTAL (000)	EMPTY CARS NORTH OR EAST (000)	EMPTY CARS SOUTH OR WEST (000)
SOUTHEAST - LAKE GULF - ALL	532	315	217	459	184	275
Transeast Gateways	19	11	9	20	9	11
Transcontinent Gateways - All	41	21	20	39	20	20
St. Louis	5	2	4	4	3	1
Memphis	20	12	8	19	8	10
New Orleans	15	7	8	17	9	8
Central East Interior	8	1	7	9	8	1
Southeast Interior	464	282	182	391	148	243
SOUTHEAST - NORTHWEST - ALL	9	5	4	8	5	3
Transeast Gateways	5	3	3	2	2	*
Transcontinent Gateways - All	4	2	1	4	3	1
St. Louis	4	2	1	4	3	1
Central East Interior	*	*	*	2	*	2
SOUTHEAST - SOUTHWEST - ALL	162	98	64	144	58	86
Transcontinent Gateways - All	98	61	37	90	38	53
St. Louis	15	8	8	15	9	7
Memphis	53	36	16	49	18	32
New Orleans	23	13	11	21	10	11
Central East Interior	1	1	*	1	*	1
Southeast Interior	64	37	27	53	20	33
NORTHWEST - LAKE GULF - ALL	285	166	120	248	98	150
Transeast Gateways	12	7	5	10	5	6
Transcontinent Gateways - All	138	97	41	115	31	84
Chicago	83	61	23	72	17	56
St.Louis	14	7	7	11	6	4
Transwest Gateways - All	38	27	11	28	8	20
Omaha	38	27	11	28	8	20
Central East Interior	47	12	35	44	30	14
Northwest Interior	50	23	27	51	25	26
NORTHWEST - SOUTHWEST - ALL	1,144	699	446	1,019	372	648
Transcontinent Gateways - All	96	52	44	98	37	61
Chicago	43	25	18	46	14	32
St. Louis	20	10	10	21	8	12
Transwest Gateways - All	731	485	247	625	194	431
Kansas City	388	265	123	333	102	231
Omaha	66	42	24	61	21	40
Denver	62	35	27	53	22	32
Ogden-Salt Lake	158	114	44	127	28	99
Portland	39	20	20	30	15	15
Central East Interior	37	20	16	28	13	15
Northwest Interior	159	72	86	152	80	72
Southwest Interior	122	70	52	116	48	68
NORTHWEST - CANADA - ALL	57	26	31	49	25	24
Northwest Interior	37	20	17	30	13	18
Canadian Interiors	20	6	15	19	12	7
SOUTHWEST - LAKE GULF - ALL	379	229	151	354	142	212
Transcontinent Gateways - All	261	159	101	241	89	153
Chicago	8	2	6	7	6	2
St. Louis	65	41	23	65	23	42
Memphis	77	49	28	70	23	48
New Orleans	51	29	22	52	20	32
Transwest Gateways - All	6	4	1	7	3	4
Omaha	6	4	1	7	3	4
Central East Interior	20	9	11	18	12	6
Southeast Interior	44	25	19	43	19	24
Northwest Interior	5	4	2	6	3	4
Southwest Interior	43	27	16	38	17	22
SOUTHWEST - MEXICO - ALL	17	10	6	16	6	10
Southwest Interior	17	10	6	16	6	10

* Less than 500 cars.

Analysis 16.1 Interterritorial Movement of Freight Carloads - December 13, 1933

ORIGIN TERRITORY	CARS ORIGINATED	DESTINATION DISTRICTS AND TERRITORIES: EASTERN	SOUTHERN	WESTERN	NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK LINE	SOUTHWESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
CARLOADS													
United States	49,105	26,015	7,740	15,350	2,648	11,009	12,358	1,964	5,776	7,678	3,628	1,637	2,407
Eastern	21,817	19,380	908	1,529	2,328	9,137	7,915	425	483	1,162	175	47	145
Southern	9,857	3,435	5,995	427	115	1,036	2,284	1,458	4,537	267	150	5	5
Western	17,431	3,200	837	13,394	205	836	2,159	81	756	6,249	3,303	1,585	2,257
New England	1,861	1,790	48	23	1,393	288	109	31	17	16	3	3	1
Trunk Line	9,972	9,523	290	159	693	7,703	1,127	178	112	66	43	7	43
Central	9,984	8,067	570	1,347	242	1,146	6,679	216	354	1,080	129	37	101
Pocahontas	3,584	2,000	1,511	73	50	717	1,233	1,255	256	65	7	1	-
Southeastern	6,273	1,435	4,484	354	65	319	1,051	203	4,281	202	143	4	5
Western Trunk Line	7,776	2,051	293	5,432	155	508	1,388	52	241	4,941	308	45	138
Southwestern	4,498	472	445	3,581	13	74	385	17	428	712	2,804	6	59
Pacific Northwest	2,305	223	37	2,045	2	59	162	1	36	367	74	1,419	185
Pacific Southwest	2,852	454	62	2,336	35	195	224	11	51	229	117	115	1,875
REVENUE (Thousands)													
United States	$5,571	$2,982	$ 822	$1,767	$ 325	$1,297	$1,360	$ 225	$ 597	$ 849	$ 422	$ 187	$ 309
Eastern	2,173	1,745	148	280	241	869	635	54	94	127	56	25	72
Southern	1,152	544	508	100	25	170	349	150	358	65	28	3	4
Western	2,246	693	166	1,387	59	258	376	21	145	657	338	159	233
New England	170	151	11	8	98	35	18	7	4	4	1	2	1
Trunk Line	1,022	912	50	60	102	678	132	22	28	18	16	5	21
Central	981	682	87	212	41	156	485	25	62	105	39	18	50
Pocahontas	459	281	160	18	9	94	178	127	33	15	2	1	-
Southeastern	693	263	348	82	16	76	171	23	325	50	26	2	4
Western Trunk Line	853	289	70	494	38	123	128	11	59	384	50	13	47
Southwestern	532	124	59	349	4	22	98	5	54	112	220	2	15
Pacific Northwest	374	86	15	273	1	26	59	1	14	96	27	118	32
Pacific Southwest	487	194	22	271	16	87	91	4	18	65	41	26	139
PERCENTAGE OF CARLOADS													
United States		53%	16%	31%	5%	22%	25%	4%	12%	16%	7%	3%	5%
Eastern		89	4	7	11	42	36	2	2	5	1	¢	1
Southern		35	61	4	1	11	23	15	46	33	2	¢	¢
Western		18	5	77	1	5	12	¢	4	36	19	9	13
New England		96	3	1	75	15	6	2	1	1	¢	¢	¢
Trunk Line		96	3	2	7	77	11	2	1	1	¢	¢	¢
Central		81	6	13	2	11	67	2	4	11	1	¢	1
Pocahontas		56	42	2	1	20	34	35	7	2	¢	¢	-
Southeastern		23	71	6	1	5	17	3	68	3	2	¢	¢
Western Trunk Line		26	4	70	2	7	18	1	3	64	4	1	2
Southwestern		11	10	80	¢	2	9	¢	10	16	62	¢	1
Pacific Northwest		10	2	89	¢	3	7	¢	2	16	3	62	8
Pacific Southwest		16	2	82	1	7	8	¢	2	8	4	4	66
PERCENTAGE OF REVENUE													
United States		54%	15%	32%	6%	23%	24%	4%	11%	15%	8%	3%	6%
Eastern		80	7	13	11	40	29	2	4	6	3	1	3
Southern		47	44	9	2	15	30	13	31	6	2	¢	¢
Western		31	7	62	3	11	17	1	6	29	15	7	10
New England		89	6	5	58	21	11	4	2	2	1	1	1
Trunk Line		89	5	6	10	66	13	2	3	2	2	¢	2
Central		70	9	22	4	16	49	3	6	11	4	2	5
Pocahontas		61	35	4	2	20	39	28	7	3	¢	¢	-
Southeastern		38	50	12	2	11	25	3	47	7	4	¢	1
Western Trunk Line		34	8	58	4	14	15	1	7	45	6	2	6
Southwestern		23	11	66	1	4	18	1	10	21	41	¢	3
Pacific Northwest		23	4	73	¢	7	16	¢	4	26	7	32	9
Pacific Southwest		40	5	56	3	18	19	1	4	13	8	5	29

¢ Less than 1/2%

Analysis 16.2 Commodity Movement - Cars Terminated in United States - December 13, 1933

COMMODITY GROUP	CARS ORIGINATED	PERCENTAGE DISTRIBUTION OF CARS BY DESTINATION TERRITORIES								
		NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK LINE	SOUTHWESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
ALL COMMODITIES	49,105	5%	22%	25%	4%	12%	16%	8%	3%	5%
I ROUGH MATERIAL	1,592	1	16	16	5	26	11	19	1	5
Sand, Stone and Gravel	1,592	1	16	16	5	26	11	19	1	5
II RAW MATERIAL	27,694	5	23	27	4	9	19	4	5	4
Bulk Grain and Beets	3,085	1	9	18	1	3	48	4	11	5
Perishables	2,199	9	22	23	3	10	13	10	6	4
Live Animals	2,696	2	11	34	1	3	31	5	2	11
Coal and Coke	14,804	5	31	33	7	6	14	1	1	2
Ores	876	2	18	14	3	17	5	4	6	31
Sulphur and Sulphuric Acid	586	1	8	8	4	66	2	7	*	4
Forest Products	3,448	6	12	16	3	23	14	11	12	3
III SEMIPROCESSED MATERIAL	2,033	7	13	14	7	23	9	18	1	8
Cotton, Hay and Tobacco	1,305	5	5	5	10	31	9	25	1	9
Paper and Products	728	11	28	30	3	9	9	3	1	6
IV NECESSARIES	6,133	8	23	18	3	18	11	11	3	5
Cereals	1,737	10	25	15	3	15	11	14	5	2
Miscellaneous Farm Products	895	2	18	21	4	21	9	16	2	7
Edible Animal Products	1,398	14	37	22	3	13	3	4	1	3
Oils - Vegetable and Animal	488	1	9	9	2	36	10	23	1	9
Manufactured Food	1,369	3	18	18	2	14	20	9	5	11
Textiles and Leather	246	13	16	14	2	37	13	3	1	1
V AUXILIARIES	8,001	8	19	25	3	11	15	12	2	5
Petroleum and Products	5,180	8	15	26	2	12	17	14	2	4
Building Materials	1,042	5	20	18	3	17	11	15	2	9
Chemicals	273	5	27	31	3	15	8	4	3	4
Miscellaneous	1,506	9	28	27	4	5	11	5	2	9
VI ACCESSORIES	3,652	4	33	30	3	10	7	6	2	5
Iron and Steel	2,432	4	36	34	2	9	5	5	1	4
Other Metals	92	3	43	33	1	1	8	4	6	1
Appliances	840	4	26	20	4	13	11	10	2	10
Glass and Tile	288	9	24	26	6	8	14	5	4	4

	TOTAL REVENUE	PERCENTAGE DISTRIBUTION OF REVENUE BY DESTINATION TERRITORIES								
ALL COMMODITIES	$5,571,683	6%	23%	24%	4%	11%	15%	8%	3%	6%
I ROUGH MATERIAL	92,362	6	17	16	5	27	9	15	1	4
Sand, Stone and Gravel	92,362	6	17	16	5	27	9	15	1	4
II RAW MATERIAL	2,988,675	5	25	27	5	8	17	5	4	4
Bulk Grain and Beets	319,834	1	10	16	1	6	41	5	14	6
Perishables	591,348	7	25	25	2	9	15	12	3	2
Live Animals	223,087	4	17	29	2	3	23	4	2	16
Coal and Coke	1,434,415	5	32	33	8	5	12	1	2	2
Ores	60,634	4	25	18	3	11	11	6	7	15
Sulphur and Sulphuric Acid	49,174	2	13	13	6	48	5	8	2	3
Forest Products	310,183	5	18	27	2	13	19	8	4	4
III SEMIPROCESSED MATERIAL	199,944	7	14	14	5	19	10	24	2	5
Cotton, Hay and Tobacco	116,540	6	5	6	7	24	8	37	1	6
Paper and Products	83,404	8	26	25	3	11	14	7	3	3
IV NECESSARIES	846,079	9	28	16	3	17	12	7	2	6
Cereals	161,037	14	30	13	4	16	8	8	4	3
Miscellaneous Farm Products	113,217	2	20	31	6	14	15	7	1	4
Edible Animal Products	285,669	15	42	12	3	15	2	3	1	7
Oils - Vegetable and Animal	51,578	1	12	15	3	31	14	14	2	8
Manufactured Food	205,782	3	16	16	2	12	25	12	4	10
Textiles and Leather	28,796	14	13	13	2	29	19	4	4	2
V AUXILIARIES	946,114	6	16	24	3	13	17	11	3	7
Petroleum and Products	602,387	5	13	25	2	15	21	11	3	5
Building Materials	97,123	5	20	15	3	16	12	15	3	11
Chemicals	57,265	4	18	43	3	10	7	7	5	3
Miscellaneous	189,339	8	25	24	4	5	13	7	3	11
VI ACCESSORIES	498,509	4	24	22	3	11	9	12	4	11
Iron and Steel	298,436	4	27	28	2	8	8	12	3	8
Other Metals	13,156	4	41	32	2	2	6	3	10	0
Appliances	154,364	3	16	10	5	16	9	14	6	21
Glass and Tile	32,553	10	22	20	6	8	20	6	2	6

* Less than 1/2%

Analysis 16.3 Commodity Movement - Cars Terminated - December 13, 1933
Originated in New England

COMMODITY GROUP	CARS ORIGINATED	PERCENTAGE DISTRIBUTION BY DESTINATION TERRITORIES								
		NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK LINE	SOUTHWESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
ALL COMMODITIES	1,861	75%	15%	6%	2%	1%	1%	#%	#%	#%
I ROUGH MATERIAL	18	56%	33%	11%	-	-	-	-	-	-
Sand, Stone and Gravel	18	56	33	11	-	-	-	-	-	-
II RAW MATERIAL*	884	78%	13%	5%	1%	1%	1%	#%	#%	#%
Bulk Grain and Beets	9	100	-	-	-	-	-	-	-	-
Perishables	185	49	27	9	3	4	4	2	2	1
Live Animals	15	80	13	-	-	-	7	-	-	-
Coal and Coke	386	100	#	-	-	-	-	-	-	-
Ores	7	29	71	-	-	-	-	-	-	-
Sulphur and Sulphuric Acid	7	100	-	-	-	-	-	-	-	-
Forest Products	275	67	20	11	1	#	-	-	-	-
III SEMIPROCESSED MATERIAL*	144	47%	31%	16%	-	5%	1%	-	-	-
Cotton, Hay and Tobacco	16	94	-	6	-	-	-	-	-	-
Paper and Products	128	41	34	17	-	5	2	-	-	-
IV NECESSARIES*	176	72%	21%	7%	1%	-	-	-	-	-
Cereals	84	96	4	-	-	-	-	-	-	-
Miscellaneous Farm Products	29	28	62	10	-	-	-	-	-	-
Edible Animal Products	10	70	30	-	-	-	-	-	-	-
Oils - Vegetables and Animal	6	33	67	-	-	-	-	-	-	-
Manufactured Food	19	47	21	26	5	-	-	-	-	-
Textiles and Leather	28	68	18	14	-	-	-	-	-	-
V AUXILIARIES*	534	88%	9%	2%	-	#%	1%	-	-	-
Petroleum and Products	401	98	2	-	-	-	-	-	-	-
Building Materials	19	74	21	5	-	-	-	-	-	-
Chemicals	9	78	-	11	-	-	11	-	-	-
Miscellaneous	105	55	31	10	-	1	2	-	-	-
VI ACCESSORIES*	105	29%	38%	10%	20%	-	3%	-	-	-
Iron and Steel	60	37	42	15	3	-	3	-	-	-
Other Metals	6	33	50	17	-	-	-	-	-	-
Appliances	34	9	32	3	56	-	-	-	-	-
Glass and Tile	5	60	20	-	-	-	20	-	-	-

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

Less than 1/2%

Analysis 16.4 Commodity Movement - Cars Terminated - December 13, 1933 - Originated in Trunk Line and Central Territories

COMMODITY GROUP	CARS ORIGI-NATED	PERCENTAGE DISTRIBUTION BY DESTINATION TERRITORIES: NEW ENGLAND	TRUNK LINE	CENTRAL	POCA-HONTAS	SOUTH-EASTERN	WESTERN TRUNK LINE	SOUTH-WESTERN	PACIFIC NORTH-WEST	PACIFIC SOUTH-WEST
ORIGINATED IN TRUNK LINE TERRITORY										
ALL COMMODITIES	9,972	7%	77%	11%	2%	1%	1%	‡%	‡%	‡%
I ROUGH MATERIAL	234	1	85	13	1	‡	-	-	-	-
Sand, Stone and Gravel	234	1	85	13	1	‡	-	-	-	-
II RAW MATERIAL*	5,836	7	82	10	1	‡	-	‡	‡	-
Bulk Grain and Beets	220	5	90	‡	1	3	-	-	-	-
Perishables	203	18	36	26	7	6	2	3	‡	-
Live Animals	63	22	68	5	3	2	-	-	-	-
Coal and Coke	4,952	6	85	9	‡	-	-	-	-	-
Ores	126	9	73	17	-	1	-	-	-	-
Sulphur and Sulphuric Acid	62	2	68	11	16	3	-	-	-	-
Forest Products	210	4	70	21	1	2	-	1	-	-
III SEMIPROCESSED MATERIAL*	267	15	60	13	3	3	4	‡	1	-
Cotton, Hay and Tobacco	65	34	58	2	2	3	2	-	-	-
Paper and Products	202	9	61	17	3	3	5	1	1	-
IV NECESSARIES*	826	13	70	11	2	2	1	-	-	1
Cereals	344	19	75	4	2	1	-	-	-	-
Miscellaneous Farm Products	127	3	64	27	1	2	3	-	-	1
Edible Animal Products	47	17	75	2	4	2	-	-	-	-
Oils - Vegetable and Animal	35	9	60	23	-	3	-	-	-	6
Manufactured Food	231	11	67	12	3	3	3	-	-	2
Textiles and Leather	42	10	67	7	5	12	-	-	-	-
V AUXILIARIES*	1,658	6	73	13	5	1	1	1	‡	‡
Petroleum and Products	916	3	81	10	4	‡	1	‡	‡	-
Building Materials	229	14	72	9	2	1	1	-	-	-
Chemicals	85	2	61	19	8	4	1	4	-	1
Miscellaneous	428	8	58	20	6	‡	3	2	1	1
VI ACCESSORIES*	1,151	5	67	16	3	4	1	2	-	3
Iron and Steel	952	5	69	16	2	2	1	2	-	3
Other Metals	26	-	81	19	-	-	-	-	-	-
Appliances	118	7	47	16	3	23	-	3	-	-
Glass and Tile	55	11	62	7	7	2	9	-	-	2
ORIGINATED IN CENTRAL TERRITORY										
ALL COMMODITIES	9,984	2%	11%	67%	2%	4%	11%	1%	‡%	1%
I ROUGH MATERIAL	259	2	5	81	5	5	2	-	-	-
Sand, Stone and Gravel	259	2	5	81	5	5	2	-	-	-
II RAW MATERIAL*	4,880	1	7	76	1	1	13	‡	‡	‡
Bulk Grain and Beets	584	1	14	73	1	6	5	‡	-	-
Perishables	86	9	16	43	10	9	12	-	-	-
Live Animals	546	3	29	62	2	‡	2	‡	‡	‡
Coal and Coke	3,352	-	1	81	‡	‡	17	‡	‡	-
Ores	127	3	33	56	6	-	2	1	-	-
Sulphur and Sulphuric Acid	28	-	4	64	14	7	11	-	-	-
Forest Products	157	4	13	68	4	2	10	-	-	-
III SEMIPROCESSED MATERIAL*	268	9	12	47	5	12	13	1	-	‡
Cotton, Hay and Tobacco	110	15	10	34	8	25	9	-	-	-
Paper and Products	158	6	14	56	3	3	16	1	-	1
IV NECESSARIES*	1,126	8	28	39	7	10	5	2	1	1
Cereals	305	6	31	36	9	14	4	-	1	1
Miscellaneous Farm Products	135	5	19	57	4	10	4	1	-	-
Edible Animal Products	348	17	38	25	8	10	1	1	-	1
Oils- Vegetable and Animal	23	-	22	48	9	13	9	-	-	-
Manufactured Food	294	3	20	48	6	5	10	5	1	3
Textiles and Leather	21	14	5	48	-	14	19	-	-	-
V AUXILIARIES*	1,891	2	6	73	2	3	11	1	‡	1
Petroleum and Products	1,150	-	‡	85	‡	2	11	1	-	-
Building Materials	206	1	14	66	4	10	3	1	-	-
Chemicals	78	5	15	50	1	10	10	4	3	1
Miscellaneous	457	5	16	50	4	3	16	2	1	4
VI ACCESSORIES	1,560	3	20	51	2	5	9	4	1	4
Iron and Steel	926	2	17	65	1	3	6	4	1	1
Other Metals	27	-	37	37	-	4	15	-	7	-
Appliances	494	3	25	27	1	10	13	7	3	12
Glass and Tile	113	11	19	48	6	4	11	2	-	1

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

‡ Less than 1/2%

Analysis 16.5 Commodity Movement - Cars Terminated - December 13, 1933 - Originated in Pocahontas and Southeastern Territories

COMMODITY GROUP	CARS ORIGI-NATED	PERCENTAGE DISTRIBUTION BY DESTINATION TERRITORIES: NEW ENGLAND	TRUNK LINE	CENTRAL	POCA-HONTAS	SOUTH-EASTERN	WESTERN TRUNK LINE	SOUTH-WESTERN	PACIFIC NORTH-WEST	PACIFIC SOUTH-WEST
ORIGINATED IN POCAHONTAS TERRITORY										
ALL COMMODITIES	3,584	1%	20%	34%	35%	7%	2%	‡%	‡%	-%
I ROUGH MATERIAL	96	-	33	6	53	7	-	-	-	-
Sand, Stone and Gravel	96	-	33	6	53	7	-	-	-	-
II RAW MATERIAL*	2,918	1	19	38	35	5	2	‡	-	‡
Bulk Grain and Beets	4	-	-	-	50	50	-	-	-	-
Perishables	47	4	57	6	4	26	-	2	-	-
Live Animals	39	-	92	3	3	-	3	-	-	-
Coal and Coke	2,644	1	16	42	35	4	2	‡	‡	-
Ores	29	-	14	-	76	10	-	-	-	-
Sulphur and Sulphuric Acid	12	-	17	-	58	25	-	-	-	-
Forest Products	143	3	38	11	46	2	-	-	-	-
III SEMIPROCESSED MATERIAL*	103	-	11	5	62	19	2	1	-	-
Cotton, Hay and Tobacco	75	-	3	-	79	19	-	-	-	-
Paper and Products	28	-	32	18	18	21	7	4	-	-
IV NECESSARIES*	84	2	18	14	24	39	2	-	-	-
Cereals	18	-	-	6	50	44	-	-	-	-
Miscellaneous Farm Products	29	-	31	21	28	14	7	-	-	-
Edible Animal Products	5	20	60	-	-	20	-	-	-	-
Oils - Vegetable and Animal	6	-	33	-	17	50	-	-	-	-
Manufactured Food	15	7	7	20	7	60	-	-	-	-
Textiles and Leather	11	-	-	18	9	73	-	-	-	-
V AUXILIARIES*	239	2	25	16	35	17	5	‡	-	-
Petroleum and Products	115	1	9	20	46	23	2	-	-	-
Building Materials	31	-	29	6	55	10	-	-	-	-
Chemicals	14	-	43	14	7	21	7	7	-	-
Miscellaneous	79	4	43	15	16	11	10	-	-	-
VI ACCESSORIES*	144	5	33	34	13	10	4	1	-	-
Iron and Steel	82	2	38	37	15	7	1	-	-	-
Other Metals	4	-	75	25	-	-	-	-	-	-
Appliances	11	-	18	45	9	-	27	-	-	-
Glass and Tile	47	11	26	28	11	17	4	4	-	-
ORIGINATED IN SOUTHEASTERN TERRITORY										
ALL COMMODITIES	6,273	1%	5%	17%	3%	68%	3%	2%	‡%	‡%
I ROUGH MATERIAL	403	‡	2	‡	2	94	-	1	-	-
Sand, Stone and Gravel	403	‡	2	‡	2	94	-	1	-	-
II RAW MATERIAL*	3,525	1	6	25	2	60	4	1	‡	-
Bulk Grain and Beets	36	-	3	-	3	94	-	-	-	-
Perishables	387	5	22	30	3	22	11	6	-	-
Live Animals	80	1	16	9	1	69	4	-	-	-
Coal and Coke	1,505	-	‡	42	3	49	4	1	‡	-
Ores	174	-	6	3	-	83	7	-	1	-
Sulphur and Sulphuric Acid	399	-	‡	4	‡	95	1	1	-	-
Forest Products	944	1	9	12	2	71	2	1	‡	-
III SEMIPROCESSED MATERIAL*	442	2	2	6	14	74	‡	1	-	-
Cotton, Hay and Tobacco	397	2	2	4	15	77	‡	-	-	-
Paper and Products	45	2	7	22	7	51	2	9	-	-
IV NECESSARIES*	777	1	5	7	4	77	3	3	‡	1
Cereals	131	-	1	1	3	93	-	2	-	-
Miscellaneous Farm Products	199	-	6	11	7	75	1	-	-	1
Edible Animal Products	35	6	11	-	11	66	-	6	-	-
Oils - Vegetable and Animal	179	-	6	5	3	84	‡	1	-	-
Manufactured Food	123	-	2	11	1	68	7	10	-	1
Textiles and Leather	110	4	5	12	3	64	10	1	1	1
V AUXILIARIES*	822	1	4	7	2	79	2	5	-	‡
Petroleum and Products	486	-	‡	4	‡	90	1	5	-	-
Building Materials	159	1	1	4	2	90	-	3	-	-
Chemicals	53	4	8	30	-	47	9	2	-	-
Miscellaneous	124	4	18	13	8	40	7	10	-	1
VI ACCESSORIES*	304	2	10	6	1	68	5	8	-	-
Iron and Steel	221	1	6	6	‡	71	7	8	-	-
Other Metals	3	-	67	-	33	-	-	-	-	-
Appliances	67	4	21	4	3	58	1	7	-	-
Glass and Tile	13	-	8	-	-	77	-	15	-	-

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

‡ Less than 1/2%.

Analysis 16.6 Commodity Movement - Cars Terminated - December 13, 1933 - Originated in Western Trunk Line and Pacific Northwest Territories

		PERCENTAGE DISTRIBUTION BY DESTINATION TERRITORIES								
COMMODITY GROUP	CARS ORIGI-NATED	NEW ENGLAND	TRUNK LINE	CENTRAL	POCA-HONTAS	SOUTH-EASTERN	WESTERN TRUNK LINE	SOUTH-WESTERN	PACIFIC NORTH-WEST	PACIFIC SOUTH-WEST
ORIGINATED IN WESTERN TRUNK LINE TERRITORY										
ALL COMMODITIES	7,776	2%	7%	18%	1%	3%	64%	40%	1%	2%
I ROUGH MATERIAL	168	-	1	4	-	-	95	1	-	-
Sand, Stone and Gravel	168	-	1	4	-	-	95	1	-	-
II RAW MATERIAL*	4,766	#	1	18	#	1	76	2	-	2
Bulk Grain and Beets	1,615	-	#	7	#	1	88	2	1	2
Perishables	131	2	2	25	1	12	31	27	-	-
Live Animals	1,306	1	3	42	1	1	49	#	#	3
Coal and Coke	1,248	-	#	1	-	-	97	2	#	#
Ores	27	-	11	59	-	4	22	4	-	-
Sulphur and Sulphuric Acid	8	-	-	38	13	-	25	-	13	13
Forest Products	431	-	3	30	#	#	65	1	-	#
III SEMIPROCESSED MATERIAL*	197	1	3	28	1	4	55	6	2	2
Cotton, Hay and Tobacco	110	1	-	7	-	4	82	5	1	-
Paper and Products	87	1	6	55	2	3	21	6	2	3
IV NECESSARIES*	1,760	7	23	21	2	10	26	7	#	2
Cereals	517	2	15	24	3	11	32	11	#	1
Miscellaneous Farm Products	59	2	14	20	-	5	49	10	-	-
Edible Animal Products	855	13	36	23	2	13	5	4	#	3
Oils - Vegetable and Animal	23	-	-	17	-	4	74	-	4	-
Manufactured Food	281	1	5	9	1	2	68	10	#	3
Textiles and Leather	25	8	-	12	-	8	64	8	-	-
V AUXILIARIES*	738	1	2	13	#	1	75	7	1	1
Petroleum and Products	495	-	#	8	-	#	86	5	-	#
Building Materials	123	-	2	11	-	6	64	15	2	-
Chemicals	10	-	10	40	-	-	40	-	-	10
Miscellaneous	110	5	11	34	1	1	39	5	2	2
VI ACCESSORIES*	147	4	7	12	1	3	38	18	5	11
Iron and Steel	54	-	2	15	-	9	35	13	11	15
Other Metals	7	14	14	29	-	-	29	14	-	-
Appliances	65	8	14	9	2	-	26	29	2	12
Glass and Tile	21	-	-	10	-	-	86	5	-	-
ORIGINATED IN PACIFIC NORTHWEST TERRITORY										
ALL COMMODITIES	2,305%	11%	3%	7%	#%	2%	16%	3%	62%	8%
I ROUGH MATERIAL	20	-	-	-	-	-	20	-	75	5
Sand, Stone & Gravel	20	-	-	-	-	-	20	-	75	5
II RAW MATERIAL*	1,785	#	3	8	#	2	15	4	60	9
Bulk Grain and Beets	400	-	-	1	-	-	5	-	84	11
Perishables	397	-	7	18	#	7	18	14	27	11
Live Animals	120	-	2	3	-	-	28	1	38	28
Coal and Coke	185	-	-	-	-	-	28	-	70	2
Ores	56	-	-	5	-	-	7	-	88	-
Sulphur and Sulphuric Acid	1	-	100	-	-	-	-	-	-	-
Forest Products	626	#	3	9	-	1	15	1	64	6
III SEMIPROCESSED MATERIAL*	33	-	-	3	-	-	15	15	58	9
Cotton, Hay and Tobacco	18	-	-	-	-	-	6	-	78	17
Paper & Products	15	-	-	7	-	-	27	33	33	-
IV NECESSARIES*	225	-	6	7	-	#	10	2	70	5
Cereals	87	-	-	3	-	1	4	-	92	-
Miscellaneous Farm Products	36	-	17	19	-	-	25	3	33	3
Edible Animal Products	23	-	22	17	-	-	-	-	39	22
Oils - Vegetable and Animal	5	-	20	20	-	-	-	-	60	-
Manufactured Food	73	-	3	-	-	-	14	4	71	8
Textiles and Leather	1	-	-	-	-	-	-	-	100	-
V AUXILIARIES*	202	-	-	2	-	-	30	1	15	2
Petroleum and Products	162	-	-	1	-	-	37	-	60	2
Building Materials	22	-	-	-	-	-	-	5	95	-
Chemicals	3	-	-	-	-	-	-	-	100	-
Miscellaneous	15	-	-	20	-	-	7	-	67	7
VI ACCESSORIES*	40	-	-	8	-	-	8	-	73	13
Iron and Steel	13	-	-	-	-	-	8	-	92	-
Other Metals	5	-	-	40	-	-	-	-	60	-
Appliances	11	-	-	9	-	-	9	-	36	45
Glass and Tile	11	-	-	-	-	-	9	-	91	-

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls. For reconciliation by primary commodities see Analysis 3.0.

Less than 1/2%.

Analysis 16.7 Commodity Movement - Cars Terminated - December 13, 1933 - Originated in Southwestern and Pacific Southwest Territories

		PERCENTAGE DISTRIBUTION BY DESTINATION TERRITORIES								
COMMODITY GROUP	CARS ORIGI-NATED	NEW ENGLAND	TRUNK LINE	CENTRAL	POCA-HONTAS	SOUTH-EASTERN	WESTERN TRUNK LINE	SOUTH-WESTERN	PACIFIC NORTH-WEST	PACIFIC SOUTH-WEST
ORIGINATED IN SOUTHWESTERN TERRITORY										
ALL COMMODITIES	4,498	#%	2%	9%	#%	10%	16%	62%	#%	1%
I ROUGH MATERIAL	318	-	#	2	-	2	#	96	-	#
Sand, Stone and Gravel	318	-	#	2	-	2	#	96	-	#
II RAW MATERIAL*	1,381	#	4	7	#	7	24	55	#	2
Bulk Grain and Beets	122	-	2	1	-	5	3	86	-	3
Perishables	103	6	29	37	-	1	13	13	2	-
Live Animals	278	-	1	5	-	3	36	49	-	6
Coal and Coke	235	-	-	-	-	-	62	35	-	3
Ores	45	-	9	9	-	2	27	51	-	2
Sulphur and Sulphuric Acid	48	-	-	2	-	-	10	85	2	-
Forest Products	550	-	2	7	#	16	8	67	-	#
III SEMIPROCESSED MATERIAL*	419	#	#	3	-	16	2	79	-	-
Cotton, Hay and Tobacco	394	#	1	1	-	13	2	83	-	-
Paper and Products	25	-	-	24	-	60	8	8	-	-
IV NECESSARIES*	789	#	3	6	2	16	8	65	#	1
Cereals	221	-	-	1	-	10	2	87	-	-
Miscellaneous Farm Products	176	1	1	6	6	6	9	72	-	-
Edible Animal Products	60	3	28	17	2	10	5	33	-	2
Oils - Vegetable and Animal	161	-	-	2	-	9	16	70	1	2
Manufactured Food	164	-	1	12	-	45	7	35	-	-
Textile and Leather	7	-	-	-	-	43	14	43	-	-
V AUXILIARIES*	1,477	#	#	14	#	8	20	56	#	1
Petroleum and Products	1,228	#	#	15	#	9	21	53	-	1
Building Materials	163	-	-	4	-	4	13	77	-	2
Chemicals	9	-	-	67	-	11	11	11	-	-
Miscellaneous	77	-	-	18	-	5	16	56	1	4
VI ACCESSORIES*	114	-	-	15	3	3	21	58	-	1
Iron and Steel	62	-	-	8	-	3	24	65	-	-
Other Metals	11	-	-	82	-	-	9	9	-	-
Appliances	28	-	-	7	7	-	21	61	-	4
Glass and Tile	13	-	-	8	8	8	15	62	-	-
ORIGINATED IN PACIFIC SOUTHWEST TERRITORY										
ALL COMMODITIES	2,852	1%	7%	8%	#%	2%	8%	4%	4%	66%
I ROUGH MATERIAL	76	-	-	-	-	-	-	-	-	100
Sand, Stone and Gravel	76	-	-	-	-	-	-	-	-	100
II RAW MATERIAL*	1,719	2	11	9	1	3	11	5	5	53
Bulk Grain and Beets	95	-	1	5	-	-	4	-	-	89
Perishables	660	5	27	22	2	6	15	11	4	8
Live Animals	219	-	#	#	-	-	12	-	1	87
Coal and Coke	297	-	-	-	-	-	13	2	22	63
Ores	285	-	-	-	-	-	1	4	-	95
Sulphur and Sulphuric Acid	21	-	-	-	-	-	-	5	-	95
Forest Products	112	2	4	8	-	3	13	-	1	70
III SEMIPROCESSED MATERIAL*	160	-	-	2	-	-	2	-	1	96
Cotton, Hay and Tobacco	120	-	-	3	-	-	3	-	1	94
Paper and Products	40	-	-	-	-	-	-	-	-	100
IV NECESSARIES*	370	-	3	12	-	2	7	4	3	69
Cereals	30	-	-	3	-	10	-	-	3	83
Miscellaneous Farm Products	105	-	5	20	-	1	10	3	3	58
Edible Animal Products	15	-	33	-	-	-	-	-	-	67
Oils-Vegetable and Animal	50	-	-	16	-	-	10	-	-	74
Manufactured Food	169	-	1	9	-	1	6	6	4	73
Textiles and Leather	1	-	-	-	-	-	-	100	-	-
V AUXILIARIES*	440	-	-	3	-	-	3	1	1	92
Petroleum and Products	227	-	-	2	-	-	3	2	1	91
Building Materials	90	-	-	-	-	-	3	1	-	96
Chemicals	12	-	-	8	-	-	-	-	25	67
Miscellaneous	111	-	-	6	-	-	2	-	-	92
VI ACCESSORIES*	87	-	-	3	-	-	-	6	6	85
Iron and Steel	62	-	-	3	-	-	-	2	6	89
Other Metals	3	-	-	-	-	-	-	67	-	33
Appliances	12	-	-	8	-	-	-	17	8	67
Glass and Tile	10	-	-	-	-	-	-	-	-	100

* Where commodities of two have been combined the total is placed under the group in which the predominant commodity falls.

Less than 1/2%.

Analysis 16.8 Comparative Statement of Revenues of Interdistrict and Intradistrict Traffic - United States and by Districts - December 13, 1933

	UNITED STATES					EASTERN DISTRICT				
		PERCENTAGE OF AGGREGATE REVENUE					PERCENTAGE OF AGGREGATE REVENUE			
	AGGREGATE REVENUE	INTRA-DISTRICT	INTERDISTRICT			AGGREGATE REVENUE	INTRA-DISTRICT	INTERDISTRICT		
			TOTAL	INBOUND	OUTBOUND			TOTAL	INBOUND	OUTBOUND
ALL COMMODITIES	$5,571,683	66%	34%	-	-	$2,173,022	67%	33%	24%	09%
I ROUGH MATERIAL	92,362	90	10	-	-	32,028	87	13	10	03
Sand, Stone and Gravel	92,362	90	10	-	-	32,028	87	13	10	03
II RAW MATERIAL	2,988,675	66	34	-	-	1,025,983	67	33	29	04
Bulk Grain and Beets	319,834	88	12	-	-	76,293	82	18	11	07
Perishables	591,348	39	61	-	-	69,327	25	75	70	05
Live Animals	223,087	67	33	-	-	48,536	57	43	41	02
Coal and Coke	1,434,415	73	27	-	-	742,241	79	21	18	03
Ores	60,634	75	25	-	-	20,022	76	24	21	03
Sulphur and Sulphuric Acid	49,174	80	20	-	-	11,945	67	33	20	13
Forest Products	310,183	60	40	-	-	57,619	50	50	48	02
III SEMIPROCESSED MATERIAL	199,944	74	26	-	-	68,112	71	29	15	14
Cotton, Hay and Tobacco	116,540	81	19	-	-	14,160	56	44	30	14
Paper and Products	83,404	65	35	-	-	53,952	76	24	10	14
IV NECESSARIES	846,079	53	47	-	-	258,531	55	45	36	09
Cereals	161,037	66	34	-	-	74,202	76	24	17	07
Miscellaneous Farm Products	113,217	56	44	-	-	29,862	53	47	40	07
Edible Animal Products	285,669	29	71	-	-	63,093	36	64	58	06
Oils - Vegetable and Animal	51,578	76	24	-	-	9,172	59	41	32	09
Manufactured Food	205,782	67	33	-	-	73,533	65	35	16	19
Textiles and Leather	28,796	57	43	-	-	8,669	62	38	26	12
V AUXILIARIES	946,114	75	25	-	-	410,737	77	23	13	10
Petroleum and Products	602,387	82	18	-	-	220,138	82	18	13	05
Building Materials	97,123	86	14	-	-	40,276	86	14	6	8
Chemicals	57,265	44	56	-	-	29,061	56	44	28	16
Miscellaneous	189,339	56	44	-	-	121,262	67	33	13	20
VI ACCESSORIES	498,509	57	43	-	-	377,631	68	32	05	27
Iron and Steel	298,436	66	34	-	-	230,067	78	22	4	18
Other Metals	13,156	57	43	-	-	7,197	67	33	24	09
Appliances	154,364	39	61	-	-	122,390	45	55	5	50
Glass and Tile	32,553	58	42	-	-	17,977	66	34	15	19
	SOUTHERN DISTRICT					WESTERN DISTRICT				
ALL COMMODITIES	$1,152,859	52%	48%	16%	32%	$2,245,802	69%	31%	9%	22%
I ROUGH MATERIAL	32,718	87	13	05	08	27,616	95	05	02	03
Sand, Stone, and Gravel	32,718	87	13	05	08	27,616	95	05	02	03
II RAW MATERIAL	786,718	48	52	08	44	1,175,974	73	27	06	21
Bulk Grain and Beets	4,177	29	71	71	-	239,364	92	08	01	07
Perishables	110,659	21	79	26	53	411,362	53	47	05	42
Live Animals	10,750	43	57	30	27	163,801	74	26	01	25
Coal and Coke	530,596	52	48	01	47	161,578	82	18	18	-
Ores	14,541	60	40	06	34	26,071	80	20	07	13
Sulphur and Sulphuric Acid	28,553	86	14	05	09	8,676	82	18	10	08
Forest Products	87,442	50	50	09	41	165,122	74	26	03	23
III SEMIPROCESSED MATERIAL	39,568	66	34	21	13	92,264	81	19	07	12
Cotton, Hay and Tobacco	29,706	74	26	18	08	72,674	90	10	01	09
Paper and Products	9,862	39	61	34	27	19,590	50	50	28	22
IV NECESSARIES	93,775	44	56	41	15	493,773	54	46	05	41
Cereals	9,046	40	60	58	02	77,789	58	42	03	39
Miscellaneous Farm Products	25,730	57	43	19	24	57,625	58	42	04	38
Edible Animal Products	4,712	10	90	87	03	217,864	26	74	01	73
Oils - Vegetable and Animal	17,883	82	18	08	10	24,523	82	18	03	15
Manufactured Food	21,824	42	58	36	22	110,425	76	24	11	13
Textiles and Leather	14,580	53	47	12	35	5,547	54	46	33	13
V AUXILIARIES	138,507	67	33	18	15	396,870	76	24	10	14
Petroleum and Products	83,150	79	21	16	5	299,099	83	17	04	13
Building Materials	14,481	72	28	20	08	42,366	92	08	03	05
Chemicals	12,632	29	71	21	50	15,572	25	75	32	43
Miscellaneous	28,244	32	68	24	44	39,833	42	58	41	17
VI ACCESSORIES	61,573	33	67	36	31	59,305	39	61	56	05
Iron and Steel	41,478	41	59	21	38	26,891	39	61	58	03
Other Metals	1,827	20	80	13	67	4,132	45	55	16	39
Appliances	10,592	25	75	63	12	21,382	33	67	62	05
Glass and Tile	7,676	29	71	22	49	6,900	61	39	31	08

Analysis 16.9 Comparative Statement of Revenues of Intraterritorial and Interterritorial Traffic - Eastern District Territories - December 13, 1933

	NEW ENGLAND					TRUNK LINE				
		PERCENTAGE OF AGGREGATE REVENUE					PERCENTAGE OF AGGREGATE REVENUE			
	AGGREGATE REVENUE	INTRA-DISTRICT	INTERDISTRICT			AGGREGATE REVENUE	INTRA-DISTRICT	INTERDISTRICT		
			TOTAL	INBOUND	OUTBOUND			TOTAL	INBOUND	OUTBOUND
ALL COMMODITIES	$ 170,004	40%	60%	46%	14%	$1,021,507	58%	42%	27%	15%
I ROUGH MATERIAL	1,283	13	87	73	14	13,745	61	39	23	16
Sand, Stone and Gravel	1,283	13	87	73	14	13,745	61	39	23	16
II RAW MATERIAL	79,389	37	63	47	16	570,573	66	34	24	10
Bulk Grain and Beets	940	52	48	48	-	19,029	64	36	29	07
Perishables	35,361	33	67	39	28	25,288	08	92	82	10
Live Animals	1,195	17	83	79	04	5.533	16	84	79	05
Coal and Coke	18,394	37	63	63	00	480,683	83	17	7	10
Ores	1,075	13	67	62	25	9.453	37	63	43	20
Sulphur and Sulphuric Acid	919	88	12	12	-	7,220	64	36	15	21
Forest Products	21,505	47	53	18	35	23,367	29	71	55	16
III SEMIPROCESSED MATERIAL	15,964	31	69	31	38	26,332	49	51	27	24
Cotton, Hay and Tobacco	743	18	82	81	01	4,776	45	55	31	24
Paper and Products	15,221	35	65	13	52	21,556	50	50	26	24
IV NECESSARIES	19,200	29	71	66	05	93,382	32	68	55	13
Cereals	10,759	63	37	36	01	36,708	60	40	27	13
Miscellaneous Farm Products	2,353	23	77	40	37	13,358	32	68	46	22
Edible Animal Product	938	4	96	96	00	4,647	6	94	93	1
Oils - Vegetable and Animal	831	23	77	32	45	4,348	31	69	44	25
Manufactured Food	1,828	11	89	69	20	30,612	48	52	27	25
Textiles and Leather	2,491	47	53	37	16	3,709	43	57	28	29
V AUXILIARIES	40,912	70	30	22	8	179,825	65	35	13	22
Petroleum and Products	28,671	90	10	8	02	93,192	83	17	4	13
Building Materials	1,534	29	71	62	09	19,768	65	35	16	19
Chemicals	1,464	51	49	35	14	12,990	45	55	23	32
Miscellaneous	9,243	35	65	44	21	53,875	40	60	26	34
VI ACCESSORIES	13,256	11	89	56	33	137,650	47	53	23	30
Iron and Steel	6,457	13	87	61	26	110,555	54	46	15	31
Other Metals	677	37	63	25	38	2,318	37	63	50	13
Appliances	5,610	04	96	41	55	18,558	18	82	49	33
Glass and Tile	512	10	90	81	09	6,219	39	61	34	27
	CENTRAL									
ALL COMMODITIES	$ 981,511%	41%	59%	37%	22%					
I ROUGH MATERIAL	17,000	72	28	10	18					
Sand, Stone and Gravel	17,000	72	28	10	18					
II RAW MATERIAL	376,021	43	57	48	9					
Bulk Grain and Beets	56,324	66	34	15	19					
Perishables	8,678	4	96	92	4					
Live Animals	41,808	33	67	44	23					
Coal and Coke	243,164	53	47	40	7					
Ores	9,494	33	67	37	30					
Sulphur and Sulphuric Acid	3,806	35	65	45	20					
Forest Products	12,747	11	89	81	8					
III SEMIPROCESSED MATERIAL	25,816	29	71	37	34					
Cotton, Hay and Tobacco	8,641	20	80	35	45					
Paper and Products	17,175	32	68	39	29					
IV NECESSARIES	145,949	23	77	36	41					
Cereals	26,735	21	79	32	47					
Miscellaneous Farm Products	14,151	23	77	60	17					
Edible Animal Products	57,508	20	80	28	52					
Oils - Vegetable and Animal	3,993	25	75	54	21					
Manufactured Food	41,093	31	69	30	39					
Textiles and Leather	2,469	15	85	53	32					
V AUXILIARIES	190,000	52	48	30	18					
Petroleum and Products	98,275	65	35	28	7					
Building Materials	18,974	56	44	15	29					
Chemicals	14,607	23	77	51	26					
Miscellaneous	58,144	30	70	28	42					
VI ACCESSORIES	226,725	37	63	14	49					
Iron and Steel	113,055	50	50	18	32					
Other Metals	4,202	20	80	40	40					
Appliances	98,322	18	82	5	77					
Glass and Textiles	[illegible]	39	61	17	44					

Analysis 16.10 Comparative Statement of Revenues of Intraterritorial and Interterritorial Traffic of Southern District Territories - December 13, 1933

	POCAHONTAS					SOUTHEASTERN				
		PERCENTAGE OF AGGREGATE REVENUE					PERCENTAGE OF AGGREGATE REVENUE			
	AGGREGATE REVENUE	INTRA-DISTRICT	INTERDISTRICT TOTAL	INBOUND	OUTBOUND	AGGREGATE REVENUE	INTRA-DISTRICT	INTERDISTRICT TOTAL	INBOUND	OUTBOUND
ALL COMMODITIES	$ 459,491	37%	63%	15%	48%	$ 693,368	51%	49%	21%	28%
I ROUGH MATERIAL	5,567	44	56	22	34	27,151	90	10	4	6
Sand, Stone and Gravel	5,567	44	56	22	34	27,151	90	10	4	6
II RAW MATERIAL	384,929	41	59	6	53	401,789	45	55	13	42
Bulk Grain and Beets	435	10	90	83	7	3,742	29	71	70	1
Perishibles	4,873	2	98	72	26	105,786	18	82	24	58
Live Animals	2,556	-	100	58	42	8,194	57	43	20	23
Coal and Coke	360,009	44	56	2	54	170,587	51	49	6	43
Ores	1,838	45	55	22	33	12,703	57	43	6	37
Sulphur and Sulphuric Acid	1,403	36	64	47	17	27,150	88	12	2	10
Forest Products	13,815	36	64	20	44	73,627	48	52	10	42
III SEMIPROCESSED MATERIAL	8,282	43	57	34	23	31,286	55	45	27	18
Cotton, Hay and Tobacco	4,522	57	43	35	8	25,184	62	38	22	16
Paper and Products	3,760	10	90	31	59	6,102	33	67	43	24
IV NECESSARIES	9,455	7	93	70	23	84,320	42	58	40	18
Cereals	1,044	15	85	77	8	8,002	41	59	56	03
Miscellaneous Farm Products	3,488	10	90	61	29	22,242	55	45	14	31
Edible Animal Products	514	-	100	94	06	4,198	10	90	85	5
Oils - Vegetable and Animal	794	10	90	58	32	17,089	78	22	9	13
Manufactured Food	2,143	2	98	64	34	19,681	41	59	35	24
Textiles and Leather	1,472	13	87	21	66	13,108	45	55	17	38
V AUXILIARIES	31,532	29	71	30	41	106,975	69	31	18	13
Petroleum and Products	15,260	43	57	23	34	67,890	80	20	17	03
Building Materials	2,146	47	53	32	21	12,335	73	27	20	07
Chemicals	3,468	8	92	27	65	9,164	26	74	24	50
Miscellaneous	10,658	11	89	39	50	17,586	29	71	22	49
VI ACCESSORIES	19,726	10	90	38	52	41,847	37	63	37	26
Iron and Steel	10,440	13	87	26	61	31,038	44	56	23	33
Other Metals	867	-	100	21	79	960	-	100	23	77
Appliances	1,415	2	98	83	15	9,177	29	71	59	12
Glass and Tile	7,004	11	89	16	73	672	28	72	65	7

Analysis 16.11 Comparative Statement of Revenues of Intraterritorial and Interterritorial Traffic - of Western District Territories - December 13, 1933

	WESTERN TRUNK LINE					PACIFIC NORTHWEST				
		PERCENTAGE OF AGGREGATE REVENUE					PERCENTAGE OF AGGREGATE REVENUE			
	AGGREGATE REVENUE	INTRA-DISTRICT	INTERDISTRICT TOTAL	INBOUND	OUTBOUND	AGGREGATE REVENUE	INTRA-DISTRICT	INTERDISTRICT TOTAL	INBOUND	OUTBOUND
ALL COMMODITIES	$ 853,348	45%	55%	27%	28%	$ 373,512	42%	58%	12%	46%
I ROUGH MATERIAL	7,942	90	10	6	4	1,107	75	25	-	25
Sand, Stone and Gravel	7,942	90	10	6	4	1,107	75	25	-	25
II RAW MATERIAL	396,533	55	45	28	17	285,422	41	59	8	51
Bulk Grain and Beets	162,709	84	16	3	13	52,549	88	12	3	9
Perishables	25,789	11	89	72	17	109,598	15	85	7	78
Live Animals	101,623	42	58	12	46	13,698	26	74	15	59
Coal and Coke	77,519	61	39	37	2	17,725	50	50	35	15
Ores	3,402	2	98	64	34	6,447	71	29	4	25
Sulphur and Sulphuric Acid	1,952	15	85	49	36	727	-	100	62	38
Forest Products	23,539	25	75	59	16	84,678	26	74	1	73
III SEMIPROCESSED MATERIAL	19,964	36	64	34	30	6,217	23	77	27	50
Cotton, Hay and Tobacco	8,914	62	38	21	17	1,309	48	52	26	26
Paper and Products	11,050	13	87	44	43	4,908	15	85	27	58
IV NECESSARIES	315,425	28	72	10	62	39,353	40	60	13	47
Cereals	55,409	32	68	03	66	7,464	79	21	9	12
Miscellaneous Farm Products	6,853	17	83	62	21	11,958	10	90	2	88
Edible Animal Products	193,706	6	94	-	94	6,091	20	80	14	66
Oils - Vegetable and Animal	2,086	28	72	64	08	1,392	21	79	33	46
Manufactured Food	53,574	66	34	17	17	12,229	43	57	17	40
Textiles and Leather	3,797	51	49	34	15	219	32	68	68	-
V AUXILIARIES	88,218	47	53	42	11	35,578	58	42	16	26
Petroleum and Products	57,422	52	48	44	4	30,415	67	33	3	30
Building Materials	13,843	61	39	14	25	2,511	78	22	16	6
Chemicals	2,179	31	69	50	19	258	17	83	83	-
Miscellaneous	14,774	18	82	53	29	2,394	10	90	68	22
VI ACCESSORIES	25,266	15	85	57	28	5,835	28	72	62	10
Iron and Steel	10,548	13	87	63	24	1,253	26	74	73	1
Other Metals	879	31	69	32	37	1,561	46	54	22	32
Appliances	12,657	15	85	45	40	2,266	15	85	71	14
Glass and Tile	1,182	21	79	74	5	755	97	03	-	3

	SOUTHWESTERN					PACIFIC SOUTHWEST				
ALL COMMODITIES	$ 531,674	46%	54%	22%	32%	$ 487,268	35%	65%	22%	43%
I ROUGH MATERIAL	14,869	94	6	2	4	3,698	98	2	2	-
Sand, Stone and Gravel	14,869	94	6	2	4	3,698	98	2	2	-
II RAW MATERIAL	143,726	35	65	31	34	350,293	29	71	11	60
Bulk Grain and Beets	17,283	64	36	14	22	6,823	36	64	54	10
Perishables	26,034	4	96	70	26	249,941	4	96	4	92
Live Animals	24,964	44	56	2	54	23,516	59	41	31	10
Coal and Coke	23,267	37	63	16	47	43,067	68	32	5	27
Ores	6,359	47	53	12	41	9,863	91	9	3	6
Sulphur and Sulphuric Acid	4,539	72	28	10	18	1,458	67	33	16	17
Forest Products	41,280	56	44	8	36	15,625	42	58	26	32
III SEMIPROCESSED MATERIAL	56,776	82	18	6	12	9,307	82	18	9	9
Cotton, Hay and Tobacco	54,305	87	13	1	12	8,146	88	12	1	11
Paper and Products	2,471	13	87	63	24	1,161	60	40	40	-
IV NECESSARIES	74,827	39	61	27	34	64,168	26	74	33	41
Cereals	11,876	67	33	18	15	3,040	44	56	37	19
Miscellaneous Farm Products	13,767	40	60	15	45	25,047	21	79	6	73
Edible Animal Products	14,297	15	85	33	52	3,770	4	96	81	15
Oils - Vegetable and Animal	14,371	61	39	2	37	6,674	51	49	14	35
Manufactured Food	19,500	25	75	44	31	25,122	32	68	30	38
Textiles and Leather	1,016	35	65	36	29	515	-	100	47	53
V AUXILIARIES	221,423	48	52	7	45	51,651	72	28	19	9
Petroleum and Products	183,047	48	52	3	49	28,215	84	16	9	7
Building Materials	14,898	73	27	14	13	11,114	94	6	3	3
Chemicals	11,102	6	94	23	71	2,033	28	72	31	41
Miscellaneous	12,376	41	59	32	27	10,289	39	61	47	14
VI ACCESSORIES	20,053	23	77	64	13	8,151	13	87	81	6
Iron and Steel	9,346	23	77	68	9	5,744	23	77	68	9
Other Metals	1,427	25	75	12	63	265	40	60	-	60
Appliances	4,938	23	77	70	7	1,521	4	96	93	3
Glass and Tile	4,342	21	79	21	58	621	51	49	49	-

Analysis 20.1 Shippers Comparison of Typical Competitive Movements

OVERALL SPEED IN MILES PER HOUR
DISTANCE BLOCK (LENGTH OF HAUL IN MILES)

ORIGIN STATE	UNDER 51		51 - 100		101 - 200		201 - 300		301 - 500		OVER 500	
	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY
UNITED STATES - TOTAL	1	8	2	9	4	12	6	15	7	15	9	15
NEW ENGLAND - TOTAL	1	8	3	8	3	9	5	15	6	13	11	15
Maine	1	12	2	6	4	7	7	17	10	24	-	-
New Hampshire	1	3	2	6	2	6	8	21	-	-	-	-
Vermont	1	9	-	-	3	9	4	16	-	-	13	16
Massachusetts	1	8	3	9	3	10	5	16	6	11	11	15
Rhode Island	1	8	2	16	-	-	3	15	4	11	-	-
Connecticut	1	11	3	10	4	9	4	9	-	-	10	13
TRUNK LINE - TOTAL	1	6	2	8	3	10	4	11	5	14	6	11
New York	1	5	2	9	3	10	5	12	5	14	6	10
New Jersey	1	7	2	10	4	11	4	11	7	14	-	-
Pennsylvania	1	7	2	7	3	10	4	12	6	15	7	15
Delaware	1	10	1	4	6	14	-	-	-	-	-	-
Maryland	1	9	4	13	4	11	3	7	-	-	-	-
District of Columbia	-	-	-	-	-	-	-	-	-	-	-	-
CENTRAL - TOTAL	1	9	3	11	4	13	6	15	7	14	9	13
Ohio	1	9	3	11	3	12	6	15	6	12	7	12
Michigan	1	9	3	10	5	13	5	14	7	12	10	12
Indiana	1	9	2	12	4	14	6	15	7	17	9	11
Illinois	2	10	3	10	6	14	8	17	9	15	10	14
SOUTHEASTERN - TOTAL	1	12	2	14	5	15	4	13	6	13	7	13
Virginia	2	20	2	10	4	15	3	13	14	20	19	19
West Virginia	1	10	-	-	3	17	5	19	6	8	8	20
Kentucky	-	-	2	13	4	19	6	18	6	14	-	-
North Carolina	1	9	2	12	5	16	4	12	4	11	6	14
South Carolina	-	-	4	24	4	21	5	23	7	22	7	13
Tennessee	1	9	3	16	5	10	4	11	6	15	7	10
Georgia	1	10	1	18	10	22	10	12	10	15	7	12
Alabama	1	10	4	13	5	16	-	-	7	20	-	-
Mississippi	3	18	-	-	6	18	-	-	6	28	-	-
Florida	2	20	4	25	7	23	12	11	-	-	15	30
WESTERN TRUNK LINE - TOTAL	1	10	3	12	6	14	9	19	9	17	11	24
Wisconsin	1	11	3	10	5	13	8	18	7	18	9	12
Minnesota	1	10	4	14	6	15	13	32	11	22	6	11
Iowa	1	8	6	21	6	16	9	17	9	14	9	21
Missouri	1	7	3	8	8	16	9	18	9	15	11	12
North Dakota	-	-	-	-	-	-	-	-	-	-	-	-
South Dakota	3	8	-	-	-	-	-	-	-	-	22	32
Nebraska	1	17	2	19	5	12	14	20	9	16	12	15
Kansas	-	-	3	8	7	17	6	17	12	20	13	21
SOUTHWESTERN - TOTAL	2	18	5	20	5	20	7	20	8	17	13	20
Arkansas	2	12	4	16	7	18	11	23	9	23	20	25
Louisiana	1	12	4	17	5	19	12	15	-	-	-	-
Oklahoma	1	22	-	-	7	25	7	19	12	21	11	19
Texas	4	20	6	22	5	19	7	21	5	13	13	17
PACIFIC NORTHWEST - TOTAL	1	14	2	9	7	19	4	13	8	17	13	22
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-
Montana	-	-	-	-	5	25	5	28	-	-	-	-
Idaho	1	24	3	10	3	18	-	-	-	-	13	25
Washington	-	-	4	16	11	18	4	11	7	14	-	-
Oregon	1	9	2	8	12	19	-	-	10	21	14	20
PACIFIC SOUTHWEST - TOTAL	2	10	3	8	6	15	8	17	10	18	11	19
Colorado	2	12	4	11	8	19	10	10	9	21	12	19
New Mexico	-	-	-	-	5	8	-	-	-	-	-	-
Utah	-	-	-	-	12	23	7	17	12	26	14	23
Arizona	-	-	-	-	-	-	10	30	-	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-
California	2	10	3	8	6	15	9	17	10	18	10	18

Analysis 20.2 Comparative Overall Speeds of Transport Agencies

LENGTH OF HAUL*

ELAPSED HOURS	UNITED STATES		EAST		SOUTH		NORTHWEST		SOUTHWEST	
	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY
6	7	56	7	45	7	97	9	97	11	61
12	13	149	13	132	14	185	17	178	23	232
18	20	263	20	247	21	235	26	325	70	349
24	24	356	26	330	27	313	60	409	135	418
30	34	445	33	412	75	395	242	706	169	523
36	149	534	82	494	167	474	290	847	261	689
42	240	644	153	584	187	550	383	988	304	804
48	275	736	259	621	214	629	437	1,129	402	919
54	377	828	291	698	239	707	492	1,271	453	1,034
60	419	920	380	776	350	786	663	1,412	503	1,149
66	758	1,012	418	853	385	865	729	1,553	781	1,264
72	827	1,104	456	931	420	943	796	1,694	852	1,379
78	895	1,197	659	1,009	547	1,022	862	1,835	924	1,494

ELAPSED HOURS

MILEAGE RANGE	UNITED STATES	EAST	SOUTH	NORTH-WEST	SOUTH-WEST
Under 50 miles					
Average Haul	33	33	31	31	32
Highway	4	4	3	3	3
Railway	28	30	26	22	17
Between 50 and 100 miles					
Average Haul	80	80	78	82	79
Highway	9	9	5	7	8
Railway	33	35	31	24	20
Between 100 and 200 miles					
Average Haul	156	157	149	155	154
Highway	13	14	10	10	9
Railway	38	43	32	26	27
Between 200 and 300 miles					
Average Haul	259	260	255	261	253
Highway	18	19	20	14	13
Railway	45	48	58	33	35
Between 300 and 500 miles					
Average Haul	396	393	373	399	414
Highway	27	28	29	23	24
Railway	57	63	64	44	49
Over 500 miles					
Average Haul	781	767	674	813	875
Highway	51	59	52	35	46
Railway	85	91	96	74	74

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* From information received in response to Shippers' Inquiry Exhibit 014.

Analysis 20.3 Speed of Railway Service

COMMODITY GROUP	AVERAGE HAUL MILES	AVERAGE TIME DAYS	MILES PER HOUR			DISTRIBUTION OF OPERATIVE TIME#					
			OVER-ALL	CARRIER TOTAL	CARRIER ROAD	LOADING	ORIGIN	DESTINATION	OTHER	UNLOADING	ROAD
ALL COMMODITIES	376	6	3	5	16	23	8	10	19	24	16
I ROUGH MATERIAL*	127	5	1	2	11	26	11	9	16	28	10
Sand, Stone and Gravel	127	5	1	2	11	26	11	9	16	28	10
II RAW MATERIAL*	365	7	2	4	16	25	7	11	19	23	15
Bulk Grain and Beets	224	6	2	3	14	14	10	23	16	26	11
Perishables	1400	9	7	10	20	10	3	6	23	25	33
Live Animals	405	2	8	10	20	18	7	5	24	7	39
Coal and Coke	249	7	1	3	13	30	7	10	19	23	11
Ores	179	4	2	3	15	23	8	15	16	26	12
Sulphur and Sulphuric Acid	182	6	1	3	15	14	7	7	13	51	8
Forest Products	376	7	2	4	15	22	10	11	18	23	16
III SEMIPROCESSED MATERIAL*	344	6	3	4	16	20	10	13	20	21	16
Cotton, Hay and Tobacco	289	4	2	4	15	17	11	14	21	21	16
Paper and Products	442	6	3	5	17	24	9	11	19	20	17
IV NECESSARIES*	550	5	4	7	19	19	8	10	18	22	23
Cereals	435	6	3	6	18	20	10	9	19	24	18
Miscellaneous Farm Products	469	6	3	6	18	18	8	11	16	28	19
Edible Animal Products	918	5	8	11	22	14	5	7	21	17	36
Oils-Vegetable and Animal	370	6	3	5	16	24	9	11	16	24	16
Manufactured Food	468	5	4	7	18	18	7	13	19	22	21
Textiles and Leather	376	5	3	5	13	19	8	10	17	21	25
V AUXILIARIES*	313	5	3	5	16	22	9	9	19	25	16
Petroleum and Products	272	4	3	5	16	22	9	9	19	25	16
Building Materials	258	4	2	4	15	22	7	8	20	29	14
Chemicals	506	6	3	6	17	18	8	9	22	24	19
Miscellaneous	454	6	3	6	17	20	9	10	18	23	18
VI ACCESSORIES*	427	6	3	6	18	23	8	9	19	22	17
Iron and Steel	316	6	2	4	16	27	9	10	18	23	13
Other Metals	468	6	3	5	17	21	8	7	25	21	18
Appliances	746	6	5	8	20	24	7	7	21	16	25
Glass and Tile	425	6	3	5	16	22	7	8	22	23	18

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* Where commodities of two groups have been combined, the total is placed under the groups in which the predominant commodity falls.

# Percentage of car days from time car set for loading until released by consignee after unloading based on test made of all cars terminating on December 13, 1933.

Analysis 20.4 Artificial Restrictions of Railway Speed

BETWEEN	AND	NUMBER OF CARRIERS	TRAFFIC COVERED	AGREED SCHEDULE HOURS	MILEAGE		OVERALL SPEED MILES PER HOUR	
					SHORT ROUTE	LONG ROUTE	SHORT ROUTE	LONG ROUTE
EASTERN DISTRICT								
New York, N.Y.	Chicago,Ill.	8	CL&LCL	53	908	997	21	22
Chicago, Ill.	New York, N.Y.	8	CL&LCL	53	908	997	21	22
SOUTHERN DISTRICT								
None reported								
WESTERN DISTRICT								
EASTBOUND FROM PACIFIC COAST								
Imperial Valley,Cal.	Memphis,Tenn.	4	CL Per*	114	1,804	2,034	14	18
Imperial Valley,Cal.	St.Louis,Mo.	7	CL Per	113	1,895	2,030	17	18
Imperial Valley,Cal.	Kansas City, Mo.	4	CL Per	102	1,557	1,764	15	18
Imperial Valley,Cal.	Chicago, Ill.	8	CL Per	121	1,955	2,593	16	22
Colton & San Bernardino,Cal.	Memphis,Tenn.	4	CL Per	117	1,914	2,145	16	18
Colton & San Bernardino,Cal.	St.Louis,Mo.	7	CL Per	103	2,002	2,414	16	24
Colton & San Bernardino,Cal.	Kansas City,Mo.	4	CL Per	116	1,692	1,984	15	17
Colton & San Bernardino,Cal.	Chicago,Ill.	8	CL Per	124	2,140	2,459	17	20
Bakersfield,Cal.	Kansas City,Mo.	6	CL Per	120	1,749	2,025	15	17
Bakersfield,Cal.	Chicago,Ill.	7	CL Per	124	2,153	2,440	18	20
Northern,California	Kansas City,Mo.	7	CL Per	102	1,781	2,230	18	22
Northern,California	Chicago,Ill.	8	CL Per	124	2,134	2,747	18	22
Yuma, Ariz.	St.Louis,Mo.	7	CL Per	105	1,810	2,213	17	21
Phoenix, Ariz.	Memphis,Tenn.	4	CL Per	93	1,589	1,820	17	20
Phoenix, Ariz.	St.Louis,Mo.	7	CL Per	92	1,680	2,080	18	23
Phoenix, Ariz.	Kansas City,Mo.	4	CL Per	79	1,337	1,549	17	20
Phoenix, Ariz.	Chicago,Ill.	8	CL Per	108	1,805	2,364	17	23
Nogales, Ariz.	Kansas City,Mo.	3	CL Per	84	1,326	1,369	16	16
Nogales, Ariz.	Chicago,Ill.	3	CL Per	113	1,818	1,836	16	16
Portland, Ore.	Seattle,Wash.	3	CL	12	178	187	15	15
Seattle,Wash.	Portland,Ore.	3	CL	11	178	187	17	18
Portland,Ore.	Kansas City,Mo.	5	CL Per	124	1,890	2,173	15	18
Portland,Ore.-Seattle,Wash.	Minneapolis-St.Paul,Minn.	3	CL&LCL	120	1,755	1,904	15	16
Northwest Pacific Coast,	Chicago,Ill.	4	CL&LCL	144	2,173	2,568	15	18
Spokane,Wash.	Kansas City,Mo.	4	CL	121	1,651	1,901	14	16
Spokane,Wash.	Chicago,Ill.	6	CL&LCL	151	1,866	2,273	12	15
WESTBOUND TO PACIFIC COAST								
Kansas City-St.Louis,Mo.	Los Angeles,Cal.	4	CL	107	1,746	1,927	16	18
Kansas City-St.Louis,Mo.	Los Angeles,Cal.	7	CL&LCL	123	1,761	2,041	14	17
Kansas City-St.Louis,Mo.	San Francisco,Cal.	7	CL	124	1,893	2,228	15	18
Chicago,Ill.	Los Angeles,Cal.	8	CL&LCL	146	2,210	2,388	15	16
Chicago,Ill.	Los Angeles,Cal.	7	CL&LCL	124	2,235	2,358	18	19
Chicago,Ill.	San Francisco,Cal.	8	CL&LCL	152	2,271	2,745	15	19
Chicago,Ill.	San Francisco,Cal.	8	CL&LCL	131	2,264	2,535	17	19
Kansas City,Mo.	Portland,Ore.	4	CL	145	1,890	2,173	13	15
Kansas City,Mo.	Spokane,Wash.	4	CL	102	1,651	1,901	16	19
Minneapolis-St.Paul,Minn.	Portland,Ore-Seattle,Wash.	3	CL&LCL	120	1,755	1,904	15	16
Chicago,Ill.	Portland,Ore-Seattle,Wash.	9	CL&LCL	143	2,173	2,352	15	17
Chicago,Ill.	Spokane,Wash.	6	CL	118	1,866	2,273	16	19
INTERMEDIATE								
Denver,Colo.	Salt Lake City,Utah	2	CL	27	570	625	21	23
Denver,Colo.	Salt Lake City,Utah	2	CL	39	570	613	15	16
Denver,Colo.	Kansas City,Mo.	6	CL	28	635	745	23	27
Kansas City,Mo.	Denver,Colo.	6	CL	45	636	745	14	17
Denver,Colo.	Chicago,Ill.	5	CL	50	1,019	1,173	20	24
Chicago,Ill.	Denver,Colo.	5	CL&LCL	59	1,008	1,182	18	20
Chicago,Ill.	Kansas City,Mo.	5	CL	24	449	513	19	21
Chicago,Ill.	Oklahoma City,Okla.	11	CL&LCL	30	542	585	18	20
TEXAS AND LOUISIANA COMMON POINTS								
Laredo,Texas	E.St.Louis,Ill.	5	CL Per	70	1,103	1,172	16	17
San Antonio,Texas	E.St.Louis,Ill	4	CL Per	60	950	1,029	16	17
Harlinger & Edinburg,Texas	E.St.Louis,Ill.	3	CL Per	63	1,154	1,189	18	19
Jacksonville,Texas	E.St.Louis,Ill.	3	CL Per	37	664	707	18	19
New Orleans,La.	Chicago,Ill.	4	CL Per	40	918	1,105	23	28
Kansas City,Mo.	Galveston,Texas	11	CL&LCL	51	884	950	18	19
St.Louis,Mo.	Houston,Texas	4	CL&LCL	60	811	1,080	14	18
Chicago,Ill.	Waco,Texas	11	CL&LCL	39	816	846	21	22

* Perishables

Analysis 20.5 Maximum Speed Restrictions for Railway Freight Service on Good Tangent Track and Schedule Agreement Decisions*

MAXIMUM SPEED RESTRICTIONS	NUMBER OF RAILWAYS UNITED STATES	NEW ENGLAND	CENTRAL EAST	POCAHONTAS	SOUTHEAST	NORTHWEST	SOUTHWEST
NUMBER OF ROADS REPORTING	99	7	28	3	17	18	26
Maximum speed, miles per hour							
20	4	-	2	-	-	1	1
25	3	-	-	-	1	1	1
30	13	2	2	-	3	3	3
35	13	-	3	-	1	2	7
40	18	3	1	1	3	3	7
45	27	2	6	1	7	5	5
50	20	-	12	1	2	3	2
55	1	-	1	-	-	-	-
60	1	-	1	-	-	-	-
RESTRICTING FACTORS							
Road	66	5	16	2	19	10	14
Power	16	2	2	-	4	3	5
Grade crossings	2	2	-	-	-	-	-
Crew experience	3	1	1	1	-	-	-
Equipment	19	-	7	-	7	3	2
Safety	31	-	9	1	3	6	12
Comfort	1	-	1	-	-	-	-
Local service	5	-	5	-	-	-	-
Economy of operation	5	-	4	1	-	-	-
Switching	1	-	1	-	-	-	-
Volume of traffic	7	1	2	-	-	1	3
Train control	2	-	-	1	-	1	-
Service requirements	4	-	-	1	1	2	-
General weather conditions	5	-	1	-	3	-	1
Length of train	2	-	-	-	1	-	1
Connection schedules	2	-	-	-	1	1	-
Operating practices	1	-	-	-	1	-	-.
SCHEDULE AGREEMENT DECISIONS							
NUMBER OF ROADS REPORTING	93	7	28	2	16	16	24
When Operating and Traffic Department officers disagree as to proper schedule decision is reached by:							
OPERATING DEPARTMENT DECISION FINAL							
As to arrival or departure	9	-	4	-	-	3	2
As to running time	25	1	7	1	4	8	3
TRAFFIC DEPARTMENT DECISION FINAL							
As to arrival or departure	9	1	-	1	3	3	1
As to running time	1	-	1	-	-	-	-
MUTUAL AGREEMENTS							
As to arrival or departure	5	-	1	-	1	1	2
As to running time	5	-	1	-	1	1	2
EXECUTIVE DEPARTMENT MAKE DECISION							
As to arrival or departure	72	6	23	1	12	9	20
As to running time	67	6	19	1	11	7	20

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* From responses to Rail Carrier Inquiry.

Analysis 20.6 Freight Schedule Conferences

CHAIRMAN OF FREIGHT SCHEDULE CONFERENCE*	NUMBER OF RAILWAYS UNITED STATES	NEW ENGLAND	EAST CENTRAL	POCAHONTAS	SOUTHEAST	NORTHWEST	SOUTHWEST
LOCAL SCHEDULES							
CHAIRMAN OF CONFERENCE							
President of Road	3	1	-	-	-	-	2
Other Representatives of Executive Department	1	-	-	-	-	1	-
Head of Operating Department	7	2	1	-	-	-	4
Other Representatives of Operating Department	43	1	18	2	8	7	7
Head of Freight Traffic Department	1	-	-	-	1	-	-
Other Representatives of Freight Traffic Dept.	1	1	-	-	-	-	-
Number of Railways Reporting	76	6	23	3	12	14	18
JOINT SCHEDULES							
CHAIRMAN OF CONFERENCE							
President of Road	2	-	1	-	-	-	1
Other Representatives of Executive Department	-	-	-	-	-	-	-
Head of Operating Department	7	1	1	-	-	1	4
Other Representatives of Operating Department	28	1	9	1	8	3	6
Head of Traffic Department	1	-	-	-	1	-	-
Other Representatives of Traffic Department	1	1	-	-	-	-	-
Number of Railways Reporting	61	6	17	2	11	11	14
ATTENDANCE AT FREIGHT SCHEDULE CONFERENCES*							
LOCAL SCHEDULES							
REPRESENTATIVES OF							
OPERATING DEPARTMENT							
Vice President and/or General Managers and Assistants	47	5	12	1	2	10	17
General Superintendents of Transportation and Assistants	40	1	14	2	6	5	12
General Superintendents and Assistants	16	1	8	2	3	1	2
Division Superintendents and Assistants	44	4	17	1	7	9	6
Train Masters, Dispatchers and Assistants	21	1	9	1	4	4	3
All Other Representatives	24	1	11	-	7	3	2
TRAFFIC DEPARTMENT							
Chief Traffic Officer, Vice President and/or Traffic Manager	22	-	4	2	5	2	9
General and/or Freight Traffic Manager and Assistants	30	1	10	-	2	8	9
General Freight Agents and Assistants	22	5	8	1	4	3	1
Division Freight and General Agents	6	-	1	1	1	3	-
General Freight and Passenger Agents	9	-	2	-	2	3	2
All Other Representatives	6	-	1	-	-	4	1
Number of Railways Reporting	76	6	23	3	12	14	18
JOINT SCHEDULES							
REPRESENTATIVES OF							
OPERATING DEPARTMENT							
Vice President and/or General Managers and Assistants	36	2	10	-	2	10	12
General Superintendents of Transportation and Assistants	36	-	12	2	7	5	10
General Superintendents and Assistants	11	1	4	-	3	2	1
Division Superintendents and Assistants	30	2	11	-	5	6	6
Train Masters, Dispatchers and Assistants	11	-	6	-	2	1	2
All Other Representatives	9	1	4	-	2	1	1
TRAFFIC DEPARTMENT							
Chief Traffic Officer, Vice President and/or Traffic Manager	20	-	4	2	6	2	6
General and/or Freight Traffic Manager and Assistants	26	3	5	-	3	6	9
General Freight Agents and Assistants	16	4	6	-	4	1	1
Passenger Traffic Managers and Assistants	6	-	-	-	2	3	1
All Other Representatives	7	-	2	-	-	4	1
Number of Railways Reporting	61	6	17	2	11	11	14

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* From Responses to Rail Organization Inquiry.

SECTION 21. POTENTIAL SPEED

. Analysis 21.1 Highway Terminal Speed Advantage

	AVERAGE HOURS PER CAR		
	RAIL DELIVERY		
	TEAM TRACK	INDUSTRY TRACK	TRUCK DELIVERY
NEW YORK	37-2/3	43-3/4	6
PHILADELPHIA	11-3/4	19-2/3	4
PITTSBURGH	15	34	4
WASHINGTON	19-1/2	62-1/4	2-1/2
CHICAGO	20	32-1/3	5
MILWAUKEE	23-1/2	43-1/4	3-1/2
CINCINNATI	31-2/3	44-1/4	3-1/2
CLEVELAND	8-3/4	52-3/4	4
TOLEDO	18-1/4	41	3
DETROIT	11-1/4	31	4
ATLANTA	10-1/2	25-1/2	3
BIRMINGHAM	53-1/2	31	4
LOUISVILLE	15	41-1/4	3
MEMPHIS	26-1/3	39-1/3	3
LITTLE ROCK	8-2/3	21	2
NEW ORLEANS	33-3/4	65-1/4	3-1/2
KANSAS CITY	55	28-1/3	3
DENVER	8-1/4	39	2-1/2
MINNEAPOLIS	32-1/3	58	2-1/2
SAINT PAUL	6-3/4	36-1/4	2-1/2
OMAHA	15-3/4	44-2/3	2-1/2
SAINT LOUIS	46-3/4	42-1/2	3-1/2
DALLAS	8-3/4	13	3
FORT WORTH	47-1/2	27	3
HOUSTON	19	40-3/4	3-1/2
SEATTLE	10-1/3	40-1/3	4
LOS ANGELES	19-1/2	34	5
SAN FRANCISCO	15	32	4
NEW ENGLAND			
Major	14	22-1/2	-
Minor	20-1/3	7-1/2	-
TRUNK LINE			
Major	17-1/4	29-3/4	-
Minor	10	17	-
CENTRAL FREIGHT			
Major	22-3/4	27	-
Minor	11	14-3/4	-
POCAHONTAS			
Major	17-1/2	21-1/3	-
Minor	8	12	-
SOUTHEASTERN			
Major	21-1/3	34-3/4	-
Minor	16	14	-
WESTERN TRUNK LINE			
Major	17-1/4	29-1/4	-
Minor	13-1/4	20	-
SOUTHWESTERN			
Major	21-3/4	30	-
Minor	12-3/4	16	-
PACIFIC NORTHWEST			
Major	23-1/2	38	-
Minor	18	33-2/3	-
PACIFIC SOUTHWEST			
Major	36-3/4	24-1/4	-
Minor	10-1/3	12-1/2	-
UNITED STATES			
Major	-	-	2-1/2
Minor	-	-	1-1/2

SECTION 22. EFFECT OF SPEEDY SERVICE

Analysis 22.1 Result of Highway Speed

	TONS REPORTED BY SHIPPERS					
	ALL SHIPPERS#			SHIPPERS USING HIGHWAY ON ACCOUNT OF SUPERIOR SPEED#		
BUSINESS GROUPS	TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT	TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT
ALL GROUPS	290,203	16,275	6%	75,492	9,329	12%
I ROUGH MATERIAL*	12,350	1,683	14%	411	255	62%
34 Sand, Stone, Gravel	12,060	1,670	14	408	255	62
8b Timber	290	14	5	3	⌿	2
II RAW MATERIAL*	67,284	1,959	3%	5,543	455	8%
10aGrain	3,068	3	¢	426	3	1
16 Fresh Fruits and Vegetables	2,436	482	20	493	102	21
22 Livestock and Poultry	832	476	57	36	22	62
12 Coal, Coke and Fuel	45,165	539	1	2,001	179	9
26 Ores and Concentrates	8,463	48	1	1,653	19	1
8c Lumber	6,833	318	5	745	51	7
03 Barrels, Cooperage Material	487	93	19	190	79	42
III SEMIPROCESSED MATERIAL*	12,748	1,314	10%	5,776	830	14%
13 Cotton, Cotton Linters	1,259	185	15	204	50	25
29 Paper, Paper Products	11,439	1,123	10	5,568	777	14
35 Horticultural Material	50	5	10	5	3	68
IV NECESSARIES*	50,748	3,869	8%	21,376	2,238	10%
04 Beverages and Liquors	1,063	339	32	770	259	34
36 Sugar, Syrups and Molasses	9,679	638	7	169	2	1
39 Vegetable Oil, Meal and Cake	1,360	213	16	94	17	18
27 Packing House Products	7,534	494	7	7,029	460	7
02 Bakery Goods, Confectionery	1,486	258	17	1,318	245	19
09 Canned Goods	2,342	299	13	785	137	17
18 Groceries	2,362	544	23	866	514	59
10bCereals, Flour, Mill Products	18,401	406	2	2,660	301	11
17 Furniture and Furnishings	606	66	11	292	50	17
31 Porcelain, China, etc.	152	6	4	14	3	20
21 Leather and Leather Goods	927	77	8	171	35	20
37 Textiles	4,166	433	10	7,029	165	2
07 Boots and Shoes	506	50	10	140	36	25
15 Dry Goods, Clothing	163	37	23	38	14	37
V AUXILIARIES*	98,280	4,192	4%	21,884	3,632	17%
8a Masonry Materials (except wood)	17,756	830	5	4,804	773	16
30 Petroleum, crude and refined	37,422	1,249	3	12,380	1,083	9
28 Paints, Varnishes and Gums	197	36	18	117	22	19
11 Chemicals	6,807	322	5	1,676	142	9
40 Miscellaneous Commodities	36,098	1,755	5	2,907	1,612	56
VI ACCESSORIES*	48,793	3,258	7%	20,501	1,938	9%
19 Iron and Steel, Structural	11,363	226	2	567	174	31
20 Iron and Steel Articles	19,935	998	5	10,816	434	4
24 Metals, Non-ferrous	1,921	216	11	1,038	116	11
33 Rubber, Rubber Articles, Tires	1,584	213	13	655	65	10
23 Machinery, Vehicles, etc.	4,974	205	4	1,808	150	8
32 Plumbing and Heating Supplies	529	21	4	259	10	4
01 Automotive Vehicles and Parts	6,331	1,253	20	4,890	905	18
05 Boats, Marine Equipment	154	1	1	3	1	25
06 Books and Periodicals	821	55	7	296	53	18
14 Department Store Merchandise	466	37	8	107	20	19
38 Tobacco, Tobacco Products	710	32	5	63	12	19
25 Musical Instruments and Supplies	5	⌿	3	-	-	-

* Where commodities of two groups have been combined the total is placed under the group in which the predominant commodity falls.

# As reported by respondents to Shippers' Inquiry.

⌿ Less than 500 tons.

¢ Less than 1/2%.

Analysis 24.1 Railway Commodities Delivered (Carloads only) United States and Eastern District Territories - 1932

COMMODITY GROUP	TOTAL CARS (000)	UNITED STATES PERCENTAGE CARS TERMINATED HOUSE	TEAM	INDUSTRY	CONNECTION DELIVERIES	TOTAL CARS (000)	NEW ENGLAND PERCENTAGE CARS TERMINATED HOUSE	TEAM	INDUSTRY	CONNECTION DELIVERIES
ALL COMMODITIES	18,285	4%	18%	59%	19%	1,031	2%	24%	68%	6%
I ROUGH MATERIAL*	837	4	44	42	10	15	#	36	56	7
Sand, Stone and Gravel	837	4	44	42	10	15	#	36	56	7
II RAW MATERIAL*	9,585	3	14	63	21	408	1	21	73	6
Bulk Grain and Beets	990	4	1	55	39	19	1	24	71	4
Perishables	881	12	42	28	18	88	#	47	47	5
Live Animals	982	3	15	57	25	29	1	19	77	4
Coal and Coke	5,165	2	11	70	17	204	1	10	82	6
Ores	456	1	9	72	18	8	1	25	58	15
Sulphur and Sulphuric Acid	106	15	3	65	18	2	-	4	80	16
Forest Products	1,005	2	16	63	19	57	1	19	77	3
III SEMIPROCESSED MATERIAL*	716	6	17	53	24	54	5	30	62	4
Cotton, Hay and Tobacco	404	6	15	53	26	20	7	38	53	2
Paper and Products	312	6	20	52	22	34	3	25	67	5
IV NECESSARIES*	2,373	4	25	50	20	201	1	33	60	6
Cereals	744	5	32	47	17	67	2	40	55	4
Miscellaneous Farm Products	451	5	33	43	20	23	3	44	50	3
Edible Animal Products	453	7	19	57	17	66	#	26	63	11
Oils-Vegetable and Animal	184	2	11	55	31	6	#	18	76	5
Manufactured Food	490	3	19	53	26	27	1	28	63	8
Textiles and Leather	50	4	16	59	21	11	4	28	68	1
V AUXILIARIES*	3,716	4	18	63	15	283	5	17	71	7
Petroleum and Products	1,816	3	11	72	14	103	1	5	83	10
Building Materials	478	3	37	47	12	35	1	33	62	4
Chemicals	43	8	10	53	29	3	-	10	86	4
Miscellaneous	1,378	6	19	56	19	143	9	21	65	6
VI ACCESSORIES*	1,058	6	22	54	18	69	2	36	56	6
Iron and Steel	576	4	15	62	19	27	1	24	63	12
Other Metals	26	5	8	59	28	4	6	9	83	2
Appliances	348	11	31	43	16	29	4	49	44	3
Glass and Tile	108	5	31	44	19	10	#	40	58	2
		TRUNK LINE					CENTRAL			
ALL COMMODITIES	4,565	7%	22%	64%	7%	4,732	1%	13%	58%	28%
I ROUGH MATERIAL*	115	1	33	60	6	206	4	35	46	15
Sand, Stone and Gravel	115	1	33	60	6	206	4	35	46	15
II RAW MATERIAL*	2,486	6	19	68	7	2,769	1	9	62	29
Bulk Grain and Beets	83	9	19	54	18	215	#	2	39	59
Perishables	292	33	47	18	2	203	3	45	18	34
Live Animals	154	4	24	62	10	259	1	8	78	13
Coal and Coke	1,689	3	14	78	5	1,790	#	5	66	28
Ores	109	1	3	53	43	127	-	1	88	11
Sulphur and Sulphuric Acid	8	3	5	83	9	9	#	4	55	41
Forest Products	150	1	25	66	7	166	1	15	55	29
III SEMIPROCESSED MATERIAL*	136	14	31	50	5	110	1	17	48	34
Cotton, Hay and Tobacco	34	8	51	39	2	19	#	11	49	39
Paper and Products	102	16	24	53	6	91	1	18	48	33
IV NECESSARIES*	601	10	28	56	6	415	1	22	44	33
Cereals	168	7	35	52	6	119	2	27	46	25
Miscellaneous Farm Products	111	12	45	39	4	77	2	19	42	38
Edible Animal Products	186	15	18	63	5	87	1	25	37	38
Oils-Vegetable and Animal	17	7	11	68	14	18	#	9	40	51
Manufactured Food	109	6	22	64	8	106	1	19	50	31
Textiles and Leather	10	11	15	63	12	8	2	18	43	37
V AUXILIARIES*	831	5	22	66	7	944	3	15	58	23
Petroleum and Products	264	1	10	82	6	458	1	13	66	19
Building Materials	136	2	40	52	6	98	2	31	47	21
Chemicals	12	4	13	75	8	10	#	7	52	41
Miscellaneous	419	9	24	59	8	378	6	14	52	28
VI ACCESSORIES*	396	12	22	56	9	287	1	11	59	30
Iron and Steel	223	8	16	65	11	201	#	8	62	29
Other Metals	6	13	12	64	11	7	#	7	53	40
Appliances	126	20	31	45	5	57	1	15	53	31
Glass and Tile	40	9	31	47	14	22	2	26	42	31

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# Less than 1/2%.

Analysis 24.2 Railway Commodities Delivered (Carloads only) Southern District Territories - 1932

COMMODITY GROUP	TOTAL CARS (000)	POCAHONTAS PERCENTAGE CARS TERMINATED HOUSE	TEAM	INDUSTRY	CONNECTION DELIVERIES	TOTAL CARS (000)	SOUTHEASTERN PERCENTAGE CARS TERMINATED HOUSE	TEAM	INDUSTRY	CONNECTION DELIVERIES
ALL COMMODITIES	782	1%	12%	77%	11%	1,702	3%	21%	56%	20%
I ROUGH MATERIAL	25	4%	33%	49%	14%	114	4%	60%	30%	6%
Sand, Stone and Gravel	25	4	33	49	14	114	4	60	30	6
II RAW MATERIAL*	493	#%	5%	87%	7%	663	4%	15%	60%	22%
Bulk Grain and Beets	9	1	18	65	16	40	1	9	62	29
Perishables	18	#	43	40	17	3	1	44	38	17
Live Animals	7	2	27	32	39	18	2	16	60	21
Coal and Coke	407	#	3	93	5	291	1	17	61	22
Ores	16	#	7	85	7	26	1	4	83	11
Sulphur and Sulphuric Acid	3	#	4	76	20	57	26	1	69	4
Forest Products	34	1	12	64	24	178	4	10	57	29
III SEMIPROCESSED MATERIAL	35	1%	8%	67%	24%	147	4%	7%	63%	26%
Cotton, Hay and Tobacco	27	1	6	67	25	125	4	6	65	25
Paper and Products	9	#	12	65	23	22	1	13	52	34
IV NECESSARIES*	79	2%	33%	47%	19%	379	2%	27%	50%	20%
Cereals	23	2	41	44	13	111	3	33	45	19
Miscellaneous Farm Products	26	2	37	37	24	96	3	46	39	12
Edible Animal Products	13	2	24	63	11	43	2	13	63	22
Oils-Vegetable and Animal	3	-	13	32	55	69	2	9	64	26
Manufactured Food	12	1	24	57	18	51	1	22	48	29
Textiles and Leather	1	18	9	50	22	11	2	8	70	20
V AUXILIARIES*	113	2%	17%	68%	14%	326	2%	16%	65%	17%
Petroleum and Products	41	1	14	73	12	183	1	9	78	12
Building Material	15	1	38	47	13	42	2	43	42	13
Chemicals	1	1	34	53	13	9	30	4	21	45
Miscellaneous	56	3	13	69	15	91	3	20	53	25
VI ACCESSORIES*	38	2%	23%	62%	13%	73	5%	29%	48%	17%
Iron and Steel	24	1	14	78	8	33	2	19	60	20
Other Metals	1	-	1	76	23	1	26	5	40	29
Appliances	9	5	48	23	23	31	9	36	40	14
Glass and Tile	4	#	28	53	19	9	1	45	37	17

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# Less than 1/2%.

Analysis 24.3 Railway Commodities Delivered (Carloads only)
Western District Territories - 1932

COMMODITY GROUP	TOTAL	WESTERN TRUNK LINE PERCENTAGE CARS TERMINATED				TOTAL	PACIFIC NORTHWEST PERCENTAGE CARS TERMINATED			
	CARS (000)	HOUSE	TEAM	INDUSTRY	CONNECTION DELIVERIES	CARS (000)	HOUSE	TEAM	INDUSTRY	CONNECTION DELIVERIES
ALL COMMODITIES	2,909	5%	17%	47%	31%	501	1%	14%	72%	13%
I ROUGH MATERIAL	157	9	48	30	13	21	#	6	92	1
Sand, Stone and Gravel	157	9	48	30	13	21	#	6	92	1
II RAW MATERIAL*	1,726	4	13	49	34	314	1	10	76	13
Bulk Grain and Beets	404	1	2	54	43	74	1	4	83	12
Perishables	91	1	30	29	40	38	1	15	69	16
Live Animals	387	4	12	46	39	21	3	21	64	12
Coal and Coke	632	6	15	50	29	55	1	17	69	13
Ores	80	6	37	42	15	5	#	2	94	4
Sulphur and Sulphuric Acid	4	3	2	47	48	ø	-	7	93	-
Forest Products	128	6	20	52	23	120	#	7	78	14
III SEMIPROCESSED MATERIAL*	69	2	23	31	45	15	1	46	44	10
Cotton, Hay and Tobacco	36	3	29	25	43	13	1	50	39	9
Paper and Products	32	1	16	37	47	3	-	22	65	14
IV NECESSARIES*	265	7	20	37	36	53	1	18	63	18
Cereals	96	11	27	36	27	28	1	19	61	19
Miscellaneous Farm Products	35	5	17	31	47	10	1	24	61	14
Edible Animal Products	28	7	11	48	34	3	2	2	69	27
Oils-Vegetable and Animal	14	5	26	36	33	1	-	46	52	2
Manufactured Food	87	3	15	39	42	11	1	12	69	18
Textiles and Leather	4	#	6	26	68	1	-	26	65	9
V AUXILIARIES*	606	8	18	53	21	83	1	16	70	13
Petroleum and Products	382	9	14	60	17	53	1	13	75	10
Building Material	75	11	35	39	15	11	1	34	45	20
Chemicals	5	2	12	43	43	ø	-	31	64	5
Miscellaneous	144	4	18	42	36	20	2	13	69	16
VI ACCESSORIES*	86	6	23	38	33	14	4	41	38	16
Iron and Steel	30	4	17	42	37	3	3	30	50	17
Other Metals	2	1	10	39	50	1	-	6	50	44
Appliances	40	6	25	38	32	9	5	47	35	14
Glass and Tile	14	10	31	30	29	2	7	53	27	13
		SOUTHWESTERN					PACIFIC SOUTHWEST			
ALL COMMODITIES	1,329	3%	25%	52%	20%	733	1%	15%	65%	19%
I ROUGH MATERIAL	142	4	66	26	4	43	1	21	63	14
Sand, Stone and Gravel	142	4	66	26	4	43	1	21	63	14
II RAW MATERIAL*	377	1	19	50	30	349	1	17	70	12
Bulk Grain and Beets	95	1	4	49	47	51	#	3	88	9
Perishables	48	1	23	44	33	51	1	49	31	20
Live Animals	48	3	38	25	35	58	2	24	44	31
Coal and Coke	52	3	29	55	13	45	#	17	77	6
Ores	17	#	5	76	20	69	#	#	96	3
Sulphur and Sulphuric Acid	20	#	6	50	44	3	1	8	81	11
Forest Products	99	2	24	58	17	71	1	16	75	8
III SEMIPROCESSED MATERIAL*	136	9	7	52	31	14	1	19	59	21
Cotton, Hay and Tobacco	124	10	6	52	32	7	1	18	65	16
Paper and Products	12	1	21	55	23	8	1	19	54	26
IV NECESSARIES*	262	3	23	51	23	117	#	10	50	39
Cereals	107	4	36	42	18	26	1	16	52	31
Miscellaneous Farm Products	42	2	18	65	15	32	#	10	48	42
Edible Animal Products	15	3	11	61	25	10	2	5	49	44
Oils-Vegetable and Animal	50	1	10	50	39	6	#	11	56	32
Manufactured Food	44	2	17	60	22	42	#	8	49	43
Textiles and Leather	4	3	16	66	15	1	1	8	62	29
V AUXILIARIES*	353	3	19	68	11	176	1	12	70	16
Petroleum and Products	246	2	11	78	9	86	#	7	80	13
Building Material	45	2	55	35	8	22	1	19	63	17
Chemicals	1	1	27	57	15	2	2	5	54	38
Miscellaneous	61	7	24	52	17	66	3	17	61	20
VI ACCESSORIES*	58	6	40	38	16	35	3	15	55	27
Iron and Steel	25	2	43	45	11	11	1	13	61	25
Other Metals	2	-	1	43	55	2	-	3	64	34
Appliances	26	10	44	28	17	21	4	17	51	27
Glass and Tile	5	4	23	53	20	2	-	11	59	30

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# Less than 1/2%.

ø Less than 500.

Analysis 24.4 Railway Deliveries - United States - 1932 #

DISTRICTS AND TERRITORIES	CARS ORIGINATED					CARS TERMINATED				
	TOTAL (000)	HOUSE TRACK (000)	CARS TEAM TRACK (000)	INDUSTRY TRACK (000)	CONNECTION TRACKS (000)	TOTAL (000)	HOUSE TRACK (000)	TEAM TRACK (000)	INDUSTRY TRACK (000)	CONNECTION TRACKS (000)
UNITED STATES	30,104	9,684	1,871	15,547	3,002	25,465	7,508	3,436	10,990	3,531
EASTERN	14,648	4,682	809	7,704	1,453	14,052	3,917	1,927	6,479	1,729
SOUTHERN	6,129	1,797	371	3,613	348	3,884	1,435	458	1,570	421
WESTERN	9,327	3,205	691	4,230	1,201	7,529	2,156	1,051	2,941	1,381
NEW ENGLAND	1,368	659	110	555	44	1,544	498	259	722	65
TRUNK LINE	6,541	1,911	326	3,879	425	6,239	1,888	1,042	2,977	332
CENTRAL	6,739	2,112	373.	3,270	984	6,269	1,531	626	2,780	1,332
POCAHONTAS	2,359	412	101	1,779	67	1,105	323	95	603	84
SOUTHEASTERN	3,770	1,385	270	1,834	281	2,779	1,112	363	967	337
WESTERN TRUNK LINE	4,599	1,861	277	1,690	771	3,955	1,145	520	1,380	910
SOUTHWESTERN	2,600	867	228	1,226	279	1,889	556	350	715	268
PACIFIC NORTHWEST	929	233	62	567	67	671	169	71	365	66
PACIFIC SOUTHWEST	1,199	244	124	747	84	1,014	286	110	481	137
	PERCENTAGES - CARS ORIGINATED					PERCENTAGES - CARS TERMINATED				
UNITED STATES	100%	32%	6%	52%	10%	100%	30%	13%	43%	14%
EASTERN	100	31	6	53	10	100	28	14	46	12
SOUTHERN	100	29	6	59	6	100	37	12	40	11
WESTERN	100	34	7	46	13	100	29	14	39	18
NEW ENGLAND	100	45	9	43	3	100	32	17	47	4
TRUNK LINE	100	29	5	60	6	100	30	17	48	5
CENTRAL	100	31	6	48	15	100	24	10	45	21
POCAHONTAS	100	17	4	76	3	100	29	9	54	8
SOUTHEASTERN	100	37	7	49	7	100	40	13	35	12
WESTERN TRUNK LINE	100	40	6	37	17	100	29	13	35	23
SOUTHWESTERN	100	33	9	47	11	100	29	19	38	14
PACIFIC NORTHWEST	100	25	7	61	7	100	25	11	54	10
PACIFIC SOUTHWEST	100	20	10	63	7	100	28	11	47	14

# Includes L.C.L.

Analysis 24.5 Rail Commodity Collections (Carload only) - Dec. 13, 1933.

COMMODITY GROUPS	TOTAL CARS ORIGINATED	PERCENTAGES - CARS ORIGINATED			
		HOUSE	TEAM	INDUSTRY	CONNECTION DELIVERY
ALL COMMODITIES	49,105	4 %	8 %	74 %	14 %
I ROUGH MATERIAL	49,104	1 %	5 %	85 %	9 %
Sand, Stone & Gravel	1,592	1	5	85	9
II RAW MATERIAL	27,694	4 %	10 %	77 %	9 %
Bulk Grain & Beets	3,085	13	14	57	16
Perishables	2,199	11	20	61	8
Live Animals	2,696	10	34	44	12
Coal & Coke	14,804	-	-	93	7
Ores	876	-	7	87	6
Sulphur & Sulphuric Acid	586	1	2	89	8
Forest Products	3,448	5	26	60	9
III SEMIPROCESSED MATERIAL	2,033	14 %	21 %	53 %	12 %
Cotton, Hay & Tobacco	1,305	17	30	45	8
Paper & Products	728	8	7	67	18
IV NECESSARIES	6,133	5 %	6 %	63 %	26 %
Cereals	1,737	2	3	64	31
Miscellaneous Farm Products	895	8	13	64	15
Edible Animal Products	1,398	3	5	53	39
Oils-Vegetable & Animal	488	6	10	65	19
Manufactured Food	1,369	5	4	72	19
Textiles & Leather	246	20	9	58	13
V AUXILIARIES	8,001	2 %	2 %	76 %	20 %
Petroleum & Products	5,180	-	1	78	21
Building Materials	1,042	1	2	81	16
Chemicals	273	6	6	62	26
Miscellaneous	1,506	9	6	66	19
VI ACCESSORIES	3,652	2 %	4 %	67 %	27 %
Iron & Steel	2,432	2	3	65	30
Other Metals	92	-	8	63	29
Appliances	840	4	6	69	21
Glass and Tile	288	2	4	79	15

Analysis 24.6 Shippers cost to complete rail service - United States - 1932

BUSINESS GROUPS	SHIPPERS' EXTRA COST PER TON	
	DRAYAGE TO AND FROM TEAM TRACK	INDUSTRY TRACK EXPENSES
ALL GROUPS	$ 1.21	$ .06
I ROUGH MATERIAL*	$ .18	$ .06
34 Sand, Stone, Gravel	.17	.06
8b Timber	.76	.05
II RAW MATERIAL*	$ .69	$ .04
10aGrain	.75	.02
16 Fresh Fruits and Vegetables	1.34	.08
22 Livestock and Poultry	2.56	.11
12 Coal, Coke and Fuel	.77	.02
26 Ores and Concentrates	.19	.03
8c Lumber	.56	.14
03 Barrels, Cooperage Material	.73	.05
III SEMIPROCESSED MATERIAL*	$ .49	$ .06
13 Cotton, Cotton Linters	.13	.10
29 Paper, Paper Products	.49	.05
35 Horticultural Material	.62	.08
IV NECESSARIES*	$ 1.51	$ .00#
04 Beverages and Liquors	.46	.05
36 Sugar, Syrups and Molasses	.59	.02
39 Vegetable Oil, Meal & Cake	3.32	.20
27 Packing House Products	2.02	.16
02 Bakery Goods, Confectionery	.32	.06
09 Canned Goods	2.11	.05
18 Groceries	1.62	.06
10bCereals, Flour, Mill Products	.32	.02
17 Furniture and Furnishings	1.68	.04
31 Porcelain, China, etc.	1.00	.08
21 Leather and Leather Goods	1.64	.07
37 Textiles	.64	.04
07 Boots and Shoes	5.42	.09
15 Dry Goods, Clothing	1.02	.06
V AUXILIARIES*	$ .49	$ .05
8a Masonry Materials (except wood)	.70	.05
30 Petroleum, Crude and Refined	2.74	.02
28 Paints, Varnishes and Gums	2.14	.04
11 Chemicals	.83	.06
40 Miscellaneous Commodities	.38	.07
VI ACCESSORIES*	$ 1.39	$ .09
19 Iron and Steel, Structural	1.11	.08
20 Iron and Steel Articles	.49	.06
24 Metals, Non-ferrous	.44	.15
33 Rubber, rubber articles, tires	.54	.06
23 Machinery, Vehicles, etc.	2.18	.16
32 Plumbing and Heating Supplies	.85	.10
61 Automotive Vehicles and Parts	1.42	.12
05 Boats, Marine Equipment	1.19	.17
01 Books and Periodicals	.56	.09
14 Department Store Merchandise	1.43	.08
38 Tobacco, Tobacco Products	2.05	.02
25 Musical Instruments and Supplies	3.04	.19

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# Less than $.005.

SECTION 25. POTENTIAL SERVICE

Analysis 25.1 Comparison of Container and Freight Car Handling Metropolitan Terminals - 1932.

COMMODITY GROUPS	TEAM TRACK CARS ORIGINATED# (000)	TEAM TRACK CARS TERMINATED# (000)	TEAM TRACK CARS TOTAL (000)	AVERAGE LOAD TONSø	CONTAINERS REQUIRED* (000)	AVERAGE NUMBER CONTAINERS PER CAR	ESTIMATED COST CONTAINER PER CAR*	ESTIMATED COST CONTAINER AGGREGATE (000)	ESTIMATED COST FREIGHT CAR PER CAR DRAYAGE*	ESTIMATED COST FREIGHT CAR PER CAR TRANSFER	ESTIMATED COST FREIGHT CAR AGGREGATE (000)
ALL GROUPS	1,834	2,303	4,137	31	12,325	3.06	$6.10	$24,615	$9.20	$6.30	$64,168
I ROUGH MATERIAL**	35	296	331	55	1,449	4.38	8.75	2,896	15.00	7.15	7,332
Sand, Stone, Gravel	35	296	331	55	1,449	4.38	8.75	2,896	15.00	7.15	7,332
II RAW MATERIAL**	1,334	933	2,267	41	6,853	3.02	6.05	13,715	9.70	6.30	36,249
Bulk Grain and Beets	227	48	275	42	1,078	3.92	7.85	2,159	12.00	6.30	5,033
Perishables	204	82	286	15	692	2.42	4.85	1,387	6.00	7.50	3,861
Live Animals	424	158	582	11	1,257	2.16	4.30	2,503	6.00	3.85	5,733
Coal and Coke	26	487	513	51	2,165	4.22	8.45	4,345	15.00	3.60	9,542
Ores	19	8	27	52	118	4.37	8.75	236	15.00	5.20	545
Sulphur and Sulphuric Acid	2	17	19	52	80	4.21	8.40	160	15.00	7.80	433
Forest Products	432	133	565	28	1,463	2.59	5.20	2,938	9.00	10.65	11,102
III SEMIPROCESSED MATERIAL**	207	100	307	17	732	2.38	4.75	1,458	4.65	4.20	2,721
Cotton, Hay and Tobacco	196	78	274	12	663	2.42	4.85	1,329	4.50	3.60	2,219
Paper and Products	11	22	33	23	69	2.10	4.20	139	6.00	9.20	502
IV NECESSARIES**	136	412	548	22	1,456	2.66	5.30	2,904	7.65	6.43	7,724
Cereals	18	224	242	23	656	2.71	5.40	1,307	7.50	4.60	2,928
Miscellaneous Farm Products	44	48	92	24	252	2.74	5.50	506	7.50	7.20	1,352
Edible Animal Products	28	31	59	13	149	2.53	5.05	298	6.00	5.20	661
Oils, Vegetable and Animal	25	31	56	27	165	2.94	5.90	330	9.00	9.45	1,033
Manufactured Food	18	69	87	28	214	2.46	4.90	426	9.00	9.80	1,636
Textiles and Leather	3	9	12	13	20	1.69	3.40	40	4.50	4.95	113
V AUXILIARIES**	70	361	431	27	1,294	3.00	6.00	2,586	8.35	7.09	6,656
Petroleum and Products	25	181	206	29	484	2.35	4.70	968	9.00	4.90	2,863
Building Materials	8	124	132	36	372	2.82	5.65	746	9.00	10.90	2,614
Chemicals	7	8	15	20	30	2.03	4.00	60	6.00	5.00	165
Miscellaneous	30	48	78	20	408	5.23	10.45	815	6.00	7.00	1,014
VI ACCESSORIES**	52	201	233	26	541	2.14	4.30	1,088	7.75	6.05	3,487
Iron and Steel	28	114	142	36	280	1.97	3.95	561	9.00	5.40	2,045
Other Metals	2	2	4	40	12	2.89	5.80	24	9.00	8.00	68
Appliances	17	47	64	12	116	1.82	3.65	230	6.00	7.20	845
Glass and Tile	5	38	43	18	133	3.10	6.20	267	6.00	6.30	529
MAJOR AND MINOR TERMINALS - 1932											
ALL GROUPS	228	1,113	1,341	31	3,734	2.89	$4.35	$5,632	$6.50	$4.49	$14,720
I ROUGH MATERIAL**	3	18	21	55	92	4.38	6.60	138	12.50	4.77	363
Sand, Stone, Gravel	3	18	21	55	92	4.38	6.60	138	12.50	4.77	363
II RAW MATERIAL**	112	582	694	41	1,941	2.90	4.20	2,915	6.95	4.49	7,939
Bulk Grain and Beets	1	32	33	42	129	3.92	5.90	193	10.00	4.20	469
Perishables	20	302	322	15	779	2.42	3.65	1,175	5.00	5.00	3,220
Live Animals	43	66	109	11	235	2.16	3.25	354	5.00	2.60	828
Coal and Coke	2	103	105	51	443	4.22	6.30	662	12.50	2.40	1,565
Ores	11	3	14	52	61	4.37	6.55	92	12.50	3.50	224
Sulphur and Sulphuric Acid	3	1	4	52	17	4.21	6.30	26	12.50	5.20	71
Forest Products	32	75	107	28	277	2.59	3.90	417	7.50	7.10	1,562
III SEMIPROCESSED MATERIAL**	18	52	70	17	153	2.19	3.30	231	4.70	5.19	691
Cotton, Hay and Tobacco	2	16	18	12	44	2.42	3.65	66	3.75	2.40	111
Paper and Products	16	36	52	23	109	2.10	3.15	164	5.00	6.15	580
IV NECESSARIES**	45	273	318	22	813	2.56	3.85	1,224	5.85	4.26	3,222
Cereals	5	47	52	23	141	2.71	4.05	211	6.25	3.10	486
Miscellaneous Farm Products	14	59	73	24	200	2.74	4.10	299	6.25	4.80	807
Edible Animal Products	6	112	118	13	299	2.53	3.80	488	5.00	3.50	1,003
Oils, Vegetable and Animal	1	5	6	27	18	2.94	3.05	27	7.50	6.30	83
Manufactured Food	11	40	51	28	125	2.46	3.70	189	7.50	6.55	717
Textiles and Leather	8	10	18	13	30	1.69	2.55	45	3.75	3.30	127
V AUXILIARIES**	23	88	111	27	470	4.23	6.35	705	5.75	4.92	1,186
Petroleum and Products	3	10	13	29	31	2.35	3.50	46	7.50	3.25	140
Building Materials	2	19	21	36	59	2.82	4.25	88	7.50	7.20	309
Chemicals	1	6	7	20	14	2.03	3.00	21	5.00	3.35	58
Miscellaneous	17	53	70	20	366	5.23	7.85	550	5.00	4.70	679
VI ACCESSORIES**	27	100	127	26	265	2.09	3.15	400	6.15	4.24	1,320
Iron and Steel	15	39	54	36	106	1.97	2.95	159	7.50	3.60	599
Other Metals	2	3	5	40	14	2.89	4.20	21	7.50	5.35	64
Appliances	8	44	52	12	95	1.82	2.75	143	5.00	4.80	510
Glass and Tile	2	14	16	18	50	3.10	4.65	75	5.00	4.20	147

Total cars originated on team tracks in 1932 apportioned between commodities on basis of one day's test.

ø All cars of this commodity 1932.

* Estimates based on load and density analysis of all carloads 1933, Field Studies and Truck Costs.

**Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

Total cars originated and terminated in U.S. on team tracks, 1932 = 5,478,825 and on Dec. 13, 1933 = 10,637. Ratio of year 1932 to Dec. 13, 1933 = 515.0724.

SECTION 26. EFFECT OF COMPLETE SERVICE

Analysis 26 1 Result of Highway Completeness

BUSINESS GROUPS	TONS REPORTED BY SHIPPERS: ALL SHIPPERS# TOTAL TONNAGE (000)	ALL SHIPPERS# HIGHWAY TONNAGE (000)	ALL SHIPPERS# PER CENT	SHIPPERS USING HIGHWAY PARTLY ACCOUNT OF COMPLETE SERVICE # TOTAL TONNAGE (000)	SHIPPERS USING HIGHWAY PARTLY ACCOUNT OF COMPLETE SERVICE # HIGHWAY TONNAGE (000)	SHIPPERS USING HIGHWAY PARTLY ACCOUNT OF COMPLETE SERVICE # PER CENT
ALL GROUPS	290,203	16,275	6%	15,581	1,499	10%
I ROUGH MATERIAL*	12,350	1,683	14%	-	-	-
34 Sand, Stone, Gravel	12,060	1,670	14	-	-	-
8b Timber	290	14	5	-	-	-
II RAW MATERIAL*	67,284	1,959	3%	133	36	27%
10aGrain	3,068	3	ø	-	-	-
16 Fresh Fruits and Vegetables	2,436	482	20	32	11	35
22 Livestock and Poultry	832	476	57	101	25	24
12 Coal, Coke and Fuel	45,165	539	1	-	-	-
26 Ores and Concentrates	8,463	48	1	5	≠	4
8c Lumber	6,833	318	5	75	20	27
03 Barrels, Cooperage Material	487	93	19	20	4	20
III SEMIPROCESSED MATERIAL*	12,748	1,314	10%	719	84	12%
13 Cotton, Cotton Linters	1,259	185	15	-	-	-
29 Paper, Paper Products	11,439	1,123	10	718	84	12
35 Horticultural	50	5	10	1	≠	53
IV NECESSARIES*	50,748	3,869	8%	962	250	26%
04 Beverages and Liquors	1,063	339	32	121	28	23
36 Sugar, Syrups and Molasses	9,679	648	7	-	-	-
39 Vegetable Oil, Meal & Cake	1,360	213	16	-	-	-
27 Packing House Products	7,534	494	7	11	6	50
02 Bakery Goods, Confectionery	1,486	258	17	110	15	13
09 Canned Goods	2,342	299	13	57	28	50
18 Groceries	2,362	544	23	210	97	46
10bCereals, Flour, Mill Products	18,401	406	2	226	19	8
17 Furniture and Furnishings	606	66	11	69	19	27
31 Porcelain, China, etc.	152	6	4	-	-	-
21 Leather and Leather Goods	927	77	8	94	21	23
37 Textiles	4,166	433	10	36	8	23
07 Boots and Shoes	506	50	10	24	9	36
15 Dry Goods, Clothing	163	37	23	5	1	24
V AUXILIARIES*	98,280	4,192	4%	3,695	356	10%
8a Masonry Materials (except wood)	17,756	830	5	589	72	12
30 Petroleum, Crude and Refined	37,422	1,249	3	8	2	32
28 Paints, Varnishes and Gums	197	36	18	47	8	17
11 Chemicals	6,807	322	5	197	30	15
40 Miscellaneous Commodities	36,098	1,755	5	2,859	244	9
VI ACCESSORIES*	48,793	3,258	7%	10,067	772	8%
19 Iron and Steel, Structural	11,363	226	2	221	14	6
20 Iron and Steel Articles	19,935	998	5	5,597	114	7
24 Metals, Nonferrous	1,921	216	11	184	15	8
33 Rubber, Rubber Articles, Tires	1,584	213	13	47	7	15
23 Machinery, Vehicles, etc.	4,974	205	4	1,889	42	2
32 Plumbing and Heating Supplies	529	21	4	-	-	-
01 Automotive Vehicles and Parts	6,331	1,253	20	5,571	539	10
05 Boats, Marine Equipment	154	1	1	1	≠	6
06 Books and Periodicals	821	55	7	521	20	4
14 Department Store Merchandise	466	37	8	33	20	61
38 Tobacco, Tobacco Products	710	32	5	4	16	46
25 Musical Instruments and Supplies	5	≠	3	≠	≠	33

* Where commodities of two groups have been combined the total is placed under the group in which the predominant commodity falls. #As reported by respondents to Shippers' Inquiry.

ø Less than 1/2% ≠ Less than 500 tons.

Analysis 30.1 Result of Highway Regular Schedules

BUSINESS GROUPS	TONS REPORTED BY SHIPPERS ALL SHIPPERS# TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT	SHIPPERS USING HIGHWAY ON ACCOUNT REGULAR SCHEDULES# TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT
ALL GROUPS	290,203	16,275	6%	32,349	3,178	10%
I ROUGH MATERIAL*	12,350	1,683	14%	213	156	73%
34 Sand, Stone, Gravel	12,060	1,670	14	212	155	73
8b Timber	290	14	5	1	1	53
II RAW MATERIAL*	67,284	1,959	3%	2,286	72	3%
10aGrain	3,068	3	¢	-	-	-
16 Fresh Fruits and Vegetables	2,436	482	20	46	11	25
22 Livestock and Poultry	832	476	57	11	3	28
12 Coal, Coke and Fuel	45,165	539	1	401	16	4
26 Ores and Concentrates	8,463	48	1	1,640	17	1
8c Lumber	6,833	318	5	136	20	15
03 Barrels, Cooperage Material	487	93	19	52	4	7
III SEMIPROCESSED MATERIAL*	12,748	1,314	10%	2,261	596	26%
13 Cotton, Cotton Linters	1,259	185	15	29	24	83
29 Paper, Paper Products	11,439	1,123	10	2,231	571	26
35 Horticultural Material	50	5	10	1	1	53
IV NECESSARIES*	50,748	3,869	8%	9,638	1,010	10%
04 Beverages and Liquors	1,063	339	32	190	169	89
36 Sugar, Syrups and Molasses	9,679	648	7	-	-	-
39 Vegetable Oil, Meal and Cake	1,360	213	16	10	7	74
27 Packing House Products	7,534	494	7	3,931	360	9
02 Bakery Goods, Confectionery	1,486	258	17	184	24	13
09 Canned Goods	2,342	299	13	453	36	8
18 Groceries	2,362	544	23	283	241	85
10bCereals, Flour, Mill Products	18,401	406	2	474	67	14
17 Furniture and Furnishings	606	66	11	118	32	27
31 Porcelain, China, etc.	152	6	4	-	-	-
21 Leather and Leather Goods	927	77	8	34	5	16
37 Textiles	4,166	433	10	3,931	49	1
07 Boots and Shoes	506	50	10	16	15	93
15 Dry Goods, Clothing	163	37	23	14	4	31
V AUXILIARIES*	98,280	4,192	4%	12,125	822	7%
8a Masonry Materials (except wood)	17,756	830	5	1,175	215	18
30 Petroleum, crude and refined	37,422	1,249	3	5,812	285	5
28 Paints, Varnishes and Gums	197	36	18	⌿	⌿	33
11 Chemicals	6,807	322	5	1,128	112	10
40 Miscellaneous Commodities	36,098	1,755	5	4,009	211	5
VI ACCESSORIES*	48,793	3,258	7%	5,827	520	9%
19 Iron and Steel, Structural	11,363	226	2	342	167	49
20 Iron and Steel Articles	19,935	998	5	3,670	114	3
24 Metals, Nonferrous	1,921	216	11	738	54	7
33 Rubber, rubber articles, tires	1,584	213	13	104	28	27
23 Machinery, Vehicles, etc.	4,974	205	4	152	18	12
32 Plumbing and Heating Supplies	529	21	4	13	6	44
01 Automotive Vehicles and Parts	6,331	1,253	20	732	118	16
03 Boats, Marine Equipment	154	1	1	⌿	⌿	10
06 Books and Periodicals	821	55	7	18	8	44
14 Department Store Merchandise	466	37	8	51	7	14
38 Tobacco, Tobacco Products	710	32	5	7	1	14
25 Musical Instruments and Supplies	5	-	3	-	-	-

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*Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls. #As reported by respondents to Shippers' Inquiry.
⌿Less than 500 tons. ¢Less than 1/2%

Analysis 30.2 Result of Highway Convenient Schedules

BUSINESS GROUPS	TONS REPORTED BY SHIPPERS ALL SHIPPERS# TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT	SHIPPERS USING HIGHWAY ON ACCOUNT OF CONVENIENT SCHEDULES# TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT
ALL GROUPS	290,203	16,275	6%	36,088	4,184	12%
I ROUGH MATERIAL*	12,350	1,683	14%	540	335	62%
34 Sand, Stone, Gravel	12,060	1,670	14	539	334	62
8b Timber	290	14	5	1	1	53
II RAW MATERIAL*	67,284	1,959	3%	4,068	203	5%
10aGrain	3,068	3	¢	-	-	-
16 Fresh Fruits and Vegetables	2,436	482	20	162	66	41
22 Livestock and Poultry	832	476	57	33	21	63
12 Coal, Coke and Fuel	45,165	539	1	523	12	2
26 Ores and Concentrates	8,463	48	1	2,472	19	1
8c Lumber	6,833	318	5	814	56	7
03 Barrels, Cooperage Material	487	93	19	64	29	45
III SEMIPROCESSED MATERIAL*	12,748	1,314	10%	2,352	231	10%
13 Cotton, Cotton Linters	1,259	185	15	122	26	21
29 Paper, Paper Products	11,439	1,123	10	2,228	204	9
35 Horticultural Material	50	5	10	2	1	41
IV NECESSARIES*	50,748	3,869	8%	9,617	1,261	13%
04 Beverages and Liquors	1,063	339	32	376	170	45
36 Sugar, Syrups and Molasses	9,679	648	7	294	48	16
39 Vegetable Oil, meal and cake	1,360	213	16	75	8	10
27 Packing House Products	7,534	494	7	6,173	421	7
02 Bakery Goods, Confectionery	1,486	258	17	265	39	15
09 Canned Goods	2,342	299	13	560	75	13
18 Groceries	2,362	544	23	302	160	53
10bCereals, Flour and Mill Products	18,401	406	2	692	138	20
17 Furniture and Furnishings	606	66	11	174	41	24
31 Porcelain, China, etc.	152	6	4	-	-	-
21 Leather and Leather Goods	927	77	8	58	16	28
37 Textiles	4,166	433	10	480	87	18
07 Boots and Shoes	506	50	10	152	49	32
15 Dry Goods, Clothing	163	37	23	16	9	54
V AUXILIARIES*	98,280	4,192	4%	13,653	1,308	10%
8a Masonry Materials (except wood)	17,756	830	5	2,101	407	19
30 Petroleum, crude and refined	37,422	1,249	3	7,494	371	5
28 Paints, Varnishes and Gums	197	36	18	38	12	30
11 Chemicals	6,807	322	5	1,157	121	11
40 Miscellaneous Commodities	36,098	1,755	5	2,863	398	14
VI ACCESSORIES*	48,793	3,258	7%	5,859	847	14%
19 Iron and Steel, Structural	11,363	226	2	313	117	37
20 Iron and Steel Articles	19,935	998	5	2,649	277	10
24 Metals, Nonferrous	1,921	216	11	600	58	10
33 Rubber, rubber articles, tires	1,584	213	13	95	17	18
23 Machinery, Vehicles, etc.	4,974	205	4	491	64	13
32 Plumbing and Heating Supplies	529	21	4	13	5	40
01 Automotive Vehicles and Parts	6,331	1,253	20	1,276	265	21
05 Boats, Marine Equipment	154	1	1	⌿	⌿	10
06 Books and Periodicals	821	55	7	376	33	9
14 Department Store Merchandise	466	37	8	38	8	20
38 Tobacco, Tobacco Products	710	32	5	7	2	24
25 Musical Instruments and Supplies	5	⌿	3	-	-	-

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*Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls. #As reported by respondents to Shippers' Inquiry.
⌿Less than 500 tons. ¢Less than 1/2%

SECTION 32. PRESENT ADAPTNESS

Analysis 32.1 Shippers' Cost for Packing and Loading Rail Shipments

	SHIPPERS' COST PER TON	
	PACKING AND CRATING *	LOADING AND UNLOADING
ALL GROUPS	$ 1.705	$ .354
I ROUGH MATERIAL*	$ .072	$ .127
34 Sand, Stone, Gravel	.068	.099
8b Timber	.486	.271
II RAW MATERIAL*	$ 1.752	$ .269
10aGrain	.137	.082
16 Fresh Fruits and Vegetables	10.313	.642
22 Livestock and Poultry	3.020	.325
12 Coal, Coke and Fuel	.031	.066
26 Ores and Concentrates	.123	.105
8c Lumber	.584	.740
03 Barrels, Cooperage Material	.527	.240
III SEMIPROCESSED MATERIAL*	$ 1.845	$ .362
13 Cotton, Cotton Linters	2.159	.437
29 Paper, Paper Products	1.748	.357
35 Horticultural Material	4.700	1.914
IV NECESSARIES*	$ 4.243	$ .460
04 Beverages and Liquors	.218	.089
36 Sugar, Syrups and Molasses	1.112	.120
39 Vegetable Oil, Meal and Cake	.919	.166
27 Packing House Products	9.814	1.090
02 Bakery Goods, Confectionery	7.244	.119
09 Canned Goods	.438	.286
18 Groceries	2.093	.372
10bCereals, Flour, Mill Products	.553	.198
17 Furniture and Furnishings	4.995	.699
31 Porcelain, China, etc.	4.569	1.637
21 Leather and Leather Goods	4.482	.853
37 Textiles	2.372	.422
07 Boots and Shoes	3.086	.743
15 Dry Goods, Clothing	.660	.523
V AUXILIARIES*	$ .343	$ .207
8a Masonry Materials (except wood)	.258	.304
30 Petroleum, Crude and Refined	.039	.176
28 Paints, Varnishes and Gums	.286	.592
11 Chemicals	.313	.095
40 Miscellaneous Commodities	.653	.270
VI ACCESSORIES*	$ 1.869	$ .447
19 Iron and Steel, Structural	.352	.125
20 Iron and Steel Articles	.403	.169
24 Metals, Non-ferrous	3.242	.531
33 Rubber, rubber articles, tires	3.090	.288
23 Machinery, Vehicles, etc.	10.420	1.071
32 Plumbing and Heating Supplies	7.257	.251
01 Automotive Vehicles and Parts	1.398	.647
05 Boats, Marine Equipment	1.885	.917
06 Books and Periodicals	2.510	.275
14 Department Store Merchandise	3.141	.662
38 Tobacco, Tobacco Products	.698	.322
25 Musical Instruments and Supplies	2.283	.040

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

SECTION 34. EFFECT OF ADAPTNESS

Analysis 34.1 Result of Highway Liberal Packing Requirements

	TONS REPORTED BY SHIPPERS					
	ALL SHIPPERS#			SHIPPERS USING HIGHWAY ON ACCOUNT OF LIBERAL PACKING ø		
BUSINESS GROUPS	TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT	TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT
ALL GROUPS	290,203	16,275	6%	35,928	4,566	13%
I ROUGH MATERIAL*	12,350	1,683	14%	211	81	38%
34 Sand, Stone, Gravel	12,060	1,670	14	211	81	38
8b Timber	290	14	5	-	-	-
II RAW MATERIAL*	67,284	1,959	3%	1,606	200	12%
10aGrain	3,068	3	∦	425	3	1
16 Fresh Fruits and Vegetables	2,436	482	20	185	23	12
22 Livestock and Poultry	832	476	57	11	3	27
12 Coal, Coke and Fuel	45,165	539	1	494	12	2
26 Ores and Concentrates	8,463	48	1	-	-	-
8c Lumber	6,835	318	5	431	130	30
03 Barrels, Cooperage Material	487	93	19	61	30	49
III SEMIPROCESSED MATERIAL*	12,748	1,314	10%	1,196	185	16%
13 Cotton, Cotton Linters	1,259	185	15	21	19	90
29 Paper, Paper Products	11,439	1,123	10	1,174	166	14
35 Horticultural Material	50	5	10	1	∤	33
IV NECESSARIES*	50,748	3,869	8%	9,875	1,117	11%
04 Beverages and Liquors	1,063	339	32	492	171	35
36 Sugar, Syrups and Molasses	9,679	648	7	9	3	38
39 Vegetable Oil, meal and cake	1,360	213	16	-	-	-
27 Packing House Products	7,534	494	7	6,917	435	6
02 Bakery Goods, Confectionery	1,486	258	17	1,158	199	17
09 Canned Goods	2,342	299	13	403	40	10
18 Groceries	2,362	544	23	253	143	56
10bCereals, Flour, Mill Products	18,401	406	2	142	19	13
17 Furniture and Furnishings	606	66	11	237	48	20
31 Porcelain, China, etc.	152	6	4	1	1	59
21 Leather and Leather Goods	527	77	15	15	9	60
37 Textiles	4,166	433	10	125	30	24
07 Boots and Shoes	506	50	10	104	15	15
15 Dry Goods, Clothing	163	37	23	17	4	26
V AUXILIARIES*	98,280	4,192	4%	12,366	1,699	14%
8a Masonry Materials (except wood)	17,756	830	5	1,066	468	44
30 Petroleum, crude and refined	37,422	1,249	3	7,527	464	6
28 Paints, Varnishes and Gums	197	36	18	32	8	26
11 Chemicals	6,807	322	5	848	106	13
40 Miscellaneous Commodities	36,098	1,755	5	2,893	653	23
VI ACCESSORIES*	48,793	3,258	7%	10,674	1,284	12%
19 Iron and Steel, Structural	11,363	226	2	590	124	21
20 Iron and Steel Articles	19,935	998	5	4,511	237	5
24 Metals, Non-ferrous	1,921	216	11	603	66	11
33 Rubber, rubber articles, tires	1,584	213	13	520	48	9
23 Machinery, Vehicles, etc.	4,974	205	4	205	32	16
32 Plumbing and Heating Supplies	529	21	4	29	6	20
01 Automotive Vehicles and Parts	6,331	1,253	20	3,972	734	18
05 Boats, Marine Equipment	154	1	1	1	1	65
06 Books and Periodicals	821	55	7	193	29	15
14 Department Store Merchandise	466	37	8	43	6	13
38 Tobacco, Tobacco Products	710	32	5	6	1	17
25 Musical Instruments and Supplies	5	∤	3	∤	∤	9

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* Where commodities of two groups have been combined the total is placed under the group in which the predominant commodity falls.

# As reported by respondents to Shippers' Inquiry.

ø As reported by respondents to Shippers' Inquiry.

∤ Less than 500 tons.

∦ Less than 1/2%.

Analysis 38.1 Shippers' Report of Comparative Average Carloads in Tons

COMMODITY GROUP	ø AVERAGE LOAD	SHIPPERS' REPORTS: OUTBOUND # SHIPMENTS AVERAGE LOAD			INBOUND # SHIPMENTS AVERAGE LOAD			INBOUND FUEL# SHIPMENTS AVERAGE LOAD			RATIO ø CAR LOAD MINIMUM WEIGHT TO HIGHWAY LOAD	RATIO RAILWAY LOAD TO HIGHWAY LOAD	⌿ SPACE REQUIRED FOR HIGHWAY LOAD CU.FT
	RAILWAY	RAILWAY	HIGHWAY	WATER	RAILWAY	HIGHWAY	WATER	RAILWAY	HIGHWAY	WATER			
ALL GROUPS	35	29	6.2	128	27	5.2	163	48	8.1	512	3.1	4.7	306
I ROUGH MATERIAL	48	52	6.0	900	43	6.5	4,078	47	6.1	7,157	3.8	8.7	114
34 Sand, Stone, Gravel	55	53	6.1	1,798	47	6.7	4,078	47	6.1	7,157	4.1	8.7	114
8b Timber	35	33	5.5	7	32	5.6	-	32	-	-	3.1	5.9	306
II RAW MATERIAL*	43	37	5.8	69	32	4.1	25	42	8.2	1,584	3.4	6.4	273
10a Grain	41	35	8.0	4,118	41	6.3	48	41	-	-	3.8	4.3	360
16 Fresh Fruit & Vegetables	20	17	6.4	19	14	5.5	19	34	5.3	-	1.9	2.5	366
22 Livestock & Poultry	11	9	3.2	10	11	2.6	8	41	7.9	-	1.6	2.8	640
12 Coal, Coke & Fuel	52	40	5.6	39	34	11.7	12	42	8.4	5,067	3.6	7.2	200
26 Ores & Concentrates	55	39	8.2	232	49	5.8	-	48	6.3	80	3.0	4.6	150
8c Lumber	26	27	9.5	81	30	5.7	41	46	11.8	75	2.0	2.8	783
03 Barrels, Cooperage	24	13	3.0	16	23	8.1	194	45	5.3	33	6.0	4.3	250
III SEMIPROCESSED MATERIAL*	23	21	7.0	21	23	6.1	70	46	11.4	600	1.5	3.0	452
13 Cotton, Cotton Linters	14	22	5.7	52	8	4.1	100	50	7.6	-	1.2	3.9	570
29 Paper, Paper Products	27	21	7.2	19	28	7.0	70	46	11.6	600	2.5	2.8	418
35 Horticultural Material	26	24	5.0	33	20	5.5	33	51	-	-	3.0	4.8	345
IV NECESSARIES*	20	18	5.7	30	27	5.8	67	47	8.9	344	2.8	3.2	362
04 Beverages & Liquors	18	15	7.6	64	18	4.9	22	42	7.4	320	2.0	2.0	400
36 Sugar, Syrups & Molasses	33	21	5.8	34	47	5.1	568	47	4.1	756	3.1	3.6	258
39 Vegetable Oil, Meal & Cake	27	24	5.7	27	28	4.6	395	51	13.2	-	3.1	4.2	259
27 Packing House Products	14	13	5.7	15	11	3.9	154	52	11.0	220	1.8	2.3	407
02 Bakery Goods, Confectionery	-	19	6.6	20	20	7.3	19	57	5.7	2	2.3	2.7	528
09 Canned Goods	23	22	9.1	19	16	8.9	93	47	6.2	503	2.0	2.4	442
18 Groceries	23	22	4.5	22	21	6.6	18	50	7.1	-	4.4	4.9	237
10b Cereals, Flour	22	23	6.7	51	32	6.4	40	38	5.1	1,070	3.0	3.3	371
17 Furniture & Furnishings	8	8	4.7	7	21	9.4	26	46	7.7	56	1.5	1.7	340
31 Porcelain, China, etc.	-	17	3.4	11	14	2.3	50	45	18.1	-	3.5	4.7	378
21 Leather & Leather Goods	22	17	7.1	18	25	8.2	17	48	12.1	205	1.3	2.4	374
37 Textiles	13	8	5.5	8	24	6.0	320	51	9.6	43	2.7	1.5	366
07 Boots & Shoes	-	14	6.9	43	14	8.0	32	17	12.1	40	1.7	1.9	115
15 Dry Goods, Clothing	-	7	8.8	23	9	8.9	29	45	7.8	5	1.7	.8	117
V AUXILIARIES*	28	31	5.6	417	30	5.5	431	51	8.0	428	2.6	5.5	333
8a Masonry Materials	34	31	8.2	101	31	6.6	208	51	7.4	340	3.0	3.8	200
30 Petroleum, Crude & Refined	29	29	10.6	664	30	7.7	3,788	45	6.5	932	1.4	2.7	400
28 Paints, Varnishes & Gums	22	15	4.0	19	16	5.3	25	46	4.9	-	3.7	3.8	178
11 Chemicals	37	37	7.1	14	35	8.4	1,035	47	6.7	330	2.5	5.2	222
40 Miscellaneous Commodities	22	27	3.4	272	28	4.9	72	51	8.5	419	3.5	7.9	378
VI ACCESSORIES*	29	21	6.8	33	26	5.3	394	45	6.9	558	2.4	3.6	341
19 Iron & Steel, Structural	33	30	7.1	100	45	3.6	4,921	46	7.1	809	2.5	4.2	85
20 Iron & Steel Articles	45	32	10.0	120	39	7.2	381	42	6.3	817	1.8	3.1	160
24 Metals, non-ferrous	40	37	7.9	200	28	3.4	33	45	7.0	223	2.3	4.6	74
33 Rubber, Articles, Tires	22	12	6.8	13	24	5.8	22	48	9.0	375	1.5	1.7	567
23 Machinery, Vehicles, etc.	18	12	4.8	12	17	4.8	23	45	6.4	95	2.5	2.3	185
32 Plumbing & Heating Supplies	-	15	8.8	23	37	6.5	39	44	6.2	18	1.7	1.6	500
01 Automotive Vehicles & Parts	11	8	5.1	8	11	4.7	1,155	49	5.9	710	2.4	1.4	468
05 Boats, Marine Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-
06 Books & Periodicals	-	15	7.2	12	26	7.6	59	30	-	-	2.1	2.1	320
14 Department Store Mdse	-	20	7.5	23	21	4.2	21	46	6.2	-	2.0	2.7	937
38 Tobacco, Tobacco Products	12	14	7.7	20	16	8.1	14	53	5.5	-	1.6	1.8	670
25 Musical Instruments	-	-	-	-	-	-	-	-	-	-	-	-	-

ø Tons ÷ Cars, ICC Commodity Statistics 1933. # As reported by respondents to Shippers' Inquiry. ø Average Carload Minimum Weight from Consolidated Classification No.9. ⌿ Based on average density of commodity. * Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

Analysis 38.2 Minimum Tender Requirements of Pipe Lines - 1932

MINIMUM IN TONS	ALL LINES COMPANIES	ALL LINES TONNAGE (000)	ATLANTIC COAST COMPANIES	ATLANTIC COAST TONNAGE (000)	GREAT LAKES SOUTHWEST COMPANIES	GREAT LAKES SOUTHWEST TONNAGE (000)	SOUTHWEST GULF COMPANIES	SOUTHWEST GULF TONNAGE (000)
CRUDE PETROLEUM								
15,500	20	113,135	4	4,451	8	41,420	8	67,264
11,625	9	10,916	6	4,533	3	6,383	0	0
7,750	4	15,908	3	3,315	1	12,593	0	0
3,875	11	44,994	0	0	3	25,325	8	19,669
1,550	3	28,677	1	1,423	1	2,303	1	24,951
775	8	29,660	4	4,902	2	15,442	2	9,316
155	3	8,157	2	2,656	1	5,501	0	0
46	1	1,656	1	1,656	0	0	0	0
None	3	1,575	2	1,567	0	0	1	8
WEIGHTED AVERAGE								
8,823	-	-	-	-	-	-	-	-
GASOLINE								
7,750	3	3,113	1	836	2	2,277	0	0

Note: Tonnage figures contain duplicates where companies published two or more minimum Tender requirements for separate portions of their lines and did not report tonnage handled separately.

SECTION 40. EFFECT OF MODERN UNIT

Analysis 40.1 Result of Highway Minimum Weight Requirements

BUSINESS GROUPS	TONS REPORTED BY SHIPPERS ALL SHIPPERS# TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT	SHIPPERS USING HIGHWAY ON ACCOUNT MINIMUM WEIGHTS ø TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT
ALL GROUPS	290,203	16,275	6%	43,237	5,484	13%
I ROUGH MATERIAL*	12,350	1,683	14%	350	163	47%
34 Sand, Stone, Gravel	12,060	1,670	14	349	163	47
8b Timber	290	14	5	1	1	53
II RAW MATERIAL*	67,284	1,959	3%	1,478	155	10%
10a Grain	3,068	3	ǂ	-	-	-
16 Fresh Fruits and Vegetables	2,436	482	20	197	39	20
22 Livestock and Poultry	832	476	57	18	8	42
12 Coal, Coke and Fuel	45,165	539	1	560	20	34
26 Ores and Concentrates	8,463	48	1	-	-	-
8c Lumber	6,833	318	5	622	76	12
03 Barrels, Cooperage Material	487	93	19	81	12	14
III SEMIPROCESSED MATERIAL*	12,748	1,314	10%	3,383	399	12%
13 Cotton, Cotton Linters	1,259	185	15	390	105	27
29 Paper, Paper Products	11,439	1,123	10	2,979	294	10
35 Horticultural Material	50	5	10	14	∤	2
IV NECESSARIES*	50,748	3,869	8%	12,205	1,928	16%
04 Beverages and Liquors	1,063	339	32	618	203	33
36 Sugar, Syrups and Molasses	9,679	648	7	264	56	21
39 Vegetable Oil, Meal and Cake	1,360	213	16	228	53	23
27 Packing House Products	7,534	494	7	6,867	428	66
02 Bakery Goods, Confectionery	1,486	258	17	1,203	213	18
09 Canned Goods	2,342	299	13	623	97	16
18 Groceries	2,362	544	23	761	617	81
10b Cereals, Flour, Mill Products	18,401	406	2	1,036	155	15
17 Furniture and Furnishings	606	66	11	159	42	26
31 Porcelain, China, etc.	152	6	4	-	-	-
21 Leather and Leather Goods	927	77	8	96	29	30
37 Textiles	4,166	433	10	335	30	9
07 Boots and Shoes	506	50	10	1	∤	17
15 Dry Goods, Clothing	163	37	23	13	4	33
V AUXILIARIES*	98,280	4,192	4%	14,787	1,749	12%
8a Masonry Materials (except wood)	17,765	830	5	2,384	593	25
30 Petroleum, crude and refined	37,422	1,249	3	7,763	337	44
28 Paints, Varnishes and Gums	197	36	18	41	11	26
11 Chemicals	6,807	322	5	1,497	134	9
40 Miscellaneous Commodities	36,098	1,755	5	3,102	675	22
VI ACCESSORIES*	48,793	3,258	7%	11,033	1,090	10%
19 Iron and Steel, Structural	11,363	226	2	484	35	7
20 Iron and Steel Articles	19,935	998	5	4,934	154	33
24 Metals, Non-ferrous	1,921	216	11	356	32	9
33 Rubber, rubber articles, tires	1,584	213	13	608	52	9
23 Machinery, Vehicles, etc.	4,974	205	4	237	39	16
32 Plumbing and Heating Supplies	529	21	4	45	8	18
01 Automotive Vehicles and Parts	6,331	1,253	20	4,040	725	18
05 Boats, Marine Equipment	154	1	1	2	∤	23
06 Books and Periodicals	821	55	7	270	37	14
14 Department Store Merchandise	466	37	8	24	5	21
38 Tobacco, Tobacco Products	710	32	5	31	2	7
25 Musical Instruments and Supplies	5	∤	3	-	-	-

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# As reported by respondents to Shippers' Inquiry.

ø As reported by respondents to Shippers' Inquiry.

∤ Less than 500 tons.

ǂ Less than 1/2%.

SECTION 43. RISK

Analysis 43.1 Factor of Insurance in Classification - Rail Freight Claim Payments - 1932*

COMMODITY GROUP	AGGREGATE PAYMENTS (000)	AVERAGE UNIT PAYMENTS PER CAR ORIGINATED	PER CAR-MILES THOUSAND	PER TON ORIGINATED	PER TON-MILES THOUSAND	RATIO TO REVENUE	RATIO TO VALUE
ALL COMMODITIES	$ 14,626	$ .81	$ 1.86	$.0234	$ .0662	.0064	.000692
I ROUGH MATERIAL							
Sand, Stone and Gravel	Included in Ores in Group II						
II RAW MATERIAL	$ 9,892	$ .95	$ 2.30	$.0226	$ .0697	.0080	.002193
Bulk Grain and Beets	370	.38	1.40	.0091	.0332	.0032	.000557
Perishables	7,304	8.63	5.93	.5877	.4123	.0323	.018938
Live Animals	1,088	1.11	2.44	.0980	.2104	.0128	.001047
Coal and Coke	787	.14	.43	.0027	.0084	.0012	.001362
Ores	254	.18	1.26	.0034	.0273	.0029	.000165
Sulphur and Sulphuric Acid	Included in Ores in Group II						
Forest Products	150	.15	.31	.0055	.0122	.0014	.000425
III SEMIPROCESSED MATERIAL	$ 123	$ .18	$ .41	$.0106	$ .0219	.0016	.000124
Cotton, Hay and Tobacco	29	.07	.19	.0057	.0141	.0008	.000047
Paper and Products	95	.33	.62	.0143	.0263	.0023	.000241
IV NECESSARIES	$ 1,674	$ .72	$ 1.28	$.0322	$ .0609	.0053	.000432
Cereals	369	.50	1.01	.0216	.0430	.0059	.000492
Miscellaneous Farm Products	242	.54	1.28	.0266	.0538	.0044	.000340
Edible Animal Products	578	1.30	1.37	.0990	.1040	.0060	.000505
Oils - Vegetable and Animal	53	.29	.74	.0108	.0276	.0026	.000280
Manufactured Food	405	.88	1.72	.0318	.0623	.0054	.000501
Textiles and Leather	27	.55	.88	.0422	.0675	.0039	.000101
V AUXILIARIES	$ 1,480	$ .40	$ 1.04	$.0152	$ .0415	.0030	.000163
Petroleum and Products	99	.06	.15	.0019	.0054	.0004	.000078
Building Materials	130	.28	1.13	.0077	.0329	.0027	.001053
Chemicals	Included in Miscellaneous in Group V						
Miscellaneous	1,252	.90	1.90	.0446	.0925	.0065	.000163
VI ACCESSORIES	$ 1,456	$ 1.38	$ 2.86	$.0523	$ .1415	.0092	.000545
Iron and Steel	151	.25	.76	.0070	.0242	.0019	.000194
Other Metals	Included in Iron and Steel in Group VI						
Appliances	984	2.83	3.76	.2336	.3228	.0153	.000538
Glass and Tile	321	2.97	6.46	.1622	.3259	.0255	.004868

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* Carload only.

Analysis 45.1 Average Load of All Railway Traffic, in Tons - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EASTERN	SOUTHERN	WESTERN	POCAHONTAS
		ALL COMMODITIES	28	29	28	24	49
	10	Wheat	44	42	42	44	40
	20	Corn	42	49	39	39	37
	30	Oats	34	37	27	32	27
	40	Barley and rye	38	32	31	40	31
	162	Flaxseed	38	32	23	39	11
	163	Sugar beets	39	36	10	40	-
01		Bulk Grain and Beets	42	43	38	42	38
	41	Rice	24	22	21	25	24
	42	Grain, N.O.S.	27	25	24	30	28
	50	Flour, wheat	24	26	19	25	22
	51	Meal, corn	22	24	18	24	20
	52	Flour and meal, edible	23	24	15	26	20
	60	Cereal, food preparations	18	17	22	19	19
	61	Mill products, N.O.S.	22	22	17	23	21
02		Other Cereals	23	24	18	24	21
	70	Hay and alfalfa	12	12	12	13	12
	71	Straw	13	13	13	14	14
	80	Tobacco, leaf	11	12	10	15	10
	90	Cotton in bales	13	15	15	12	15
	91	Cotton linters, noils, etc.	19	19	19	21	19
03		Cotton, Hay and Tobacco	13	13	14	13	11
	110	Oranges and grapefruit	17	17	17	17	17
	111	Lemons, limes and citrus	14	15	15	14	16
	120	Apples, fresh	17	15	16	17	13
	121	Bananas	10	10	10	10	10
	122	Berries, fresh	15	14	12	17	7
	123	Cantaloupes and melons	11	11	12	11	12
	124	Grapes, fresh	14	13	14	14	14
	125	Peaches, fresh	12	11	11	13	11
	126	Watermelons	13	13	13	12	14
	127	Fruits, fresh, domestic	13	13	13	14	14
	128	Fruits, fresh, tropical	12	13	12	13	12
	130	Potatoes, other than sweet	17	18	18	17	15
	140	Cabbage	13	12	12	13	12
	141	Onions	13	13	13	13	12
	142	Tomatoes	11	11	10	11	12
	143	Vegetables, fresh, N.O.S.	11	11	11	11	11
04		Perishables	14	14	13	14	14
	150	Beans and peas, dried	27	25	27	29	25
	151	Fruits, dried or evaporated	31	24	33	33	20
	152	Vegetables, dry, N.O.S.	13	13	14	14	14
	161	Peanuts	15	15	14	17	14
	164	Products of agriculture	21	21	21	21	23
	282	Animal products, N.O.S.	19	18	17	21	18
	640	Fertilisers, N.O.S.	28	27	26	35	26
05		Miscellaneous Farm Products	23	22	22	26	21
	170	Horses, mules, ponies	12	11	12	11	12
	180	Cattle and calves, single-deck	11	11	11	11	11
	181	Calves, double-deck	12	12	12	11	16
	190	Sheep, goats, single-deck	7	8	8	7	7
	191	Sheep, goats, double-deck	10	9	11	10	9
	200	Hogs, single-deck	8	9	8	8	8
	201	Hogs, double-deck	12	12	13	12	12
	230	Poultry, live	9	8	10	9	9
	260	Wool	14	13	14	16	15
	270	Hides, green	22	22	23	23	22
	281	Animals, live, N.O.S.	15	14	23	17	17
06		Live Animals	11	12	11	11	12
	210	Fresh meats, N.O.S.	12	12	13	12	13
	220	Meats, cured, dried, etc.	15	15	14	17	15
	221	Butterine and margarine	11	10	12	14	13
	222	Packing-house products	16	16	16	17	16
	231	Poultry, dressed	11	11	12	11	12
	240	Eggs	12	11	10	13	10
	250	Butter	12	12	12	12	12
	251	Cheese	14	14	13	15	13
07		Animal Products, Edible	13	12	13	13	14
	290	Anthracite coal	48	48	37	30	48
	300	Bituminous coal	52	53	50	40	58
	310	Coke	31	31	34	31	30
08		Coal and Coke	51	51	50	39	58
	320	Iron ore	62	65	58	58	68
	330	Copper ore, concentrates	51	36	45	53	35
	331	Lead ore and concentrates	48	49	52	47	44
	332	Zinc ore and concentrates	49	47	50	51	56
	333	Ores and concentrates	48	45	53	49	53
	392	Products of mines, N.O.S.	42	44	36	42	41
09		Ores	46	47	38	47	45
	350	Gravel and sand	53	53	50	54	58
	351	Stone, broken, ground, etc.	53	53	54	52	55
	352	Stone, rough, N.O.S.	38	38	36	41	37
	353	Stone, finished, N.O.S.	30	30	28	32	25
10		Sand, Stone and Gravel	49	46	48	52	51
	390	Phosphate rock, crude, etc.	49	40	48	60	50
	391	Sulphur (brimstone)	46	39	41	47	50
	661	Sulphuric acid	47	44	51	46	53
11		Sulphur and Sulphuric Acid	47	41	48	48	52
	360	Petroleum, crude	34	32	32	34	38
	370	Asphalt	33	32	34	35	34
	450	Petroleum oils, refined	27	27	27	27	27
	451	Fuel, road, residual oils	32	30	31	32	30
	452	Lubricating oils, etc.	21	21	20	21	19
	453	Petroleum products	23	24	29	22	25
12		Petroleum and Products	27	27	27	28	27
	400	Logs	34	28	29	36	32
	401	Posts, poles, and piling	26	29	28	25	32
	402	Wood (fuel)	28	24	26	29	32
	410	Ties, railroad	32	32	29	34	32
	420	Pulpwood	32	28	31	35	30
	430	Lumber, shingles, and lath	25	23	25	25	25
	431	Box, crate, and cooperage	22	22	21	23	23
	432	Veneer and built-up wood	24	22	20	25	22
	442	Crude rubber (unreclaimed)	36	36	31	32	37
	443	Products of forests, N.O.S.	18	16	21	18	18
13		Forest Products	25	24	25	26	25
	100	Cottonseed	27	30	25	29	19
	101	Cottonseed meal and cake	25	26	23	25	22
	160	Vegetable - oil cake, etc.	25	26	22	22	37
	460	Cottonseed oil	27	27	26	29	28
	461	Linseed oil	25	25	27	26	24
	462	Vegetable oils, N.O.S.	29	29	30	30	28
	280	Fish or sea-animal oil	29	26	29	30	33
14		Oils, Vegetable and Animal	26	27	25	27	27
	490	Iron, pig	52	50	55	53	52
	491	Iron and steel, 6th class	44	44	51	47	29
	500	Rails, fastenings, etc.	32	28	34	38	35
	510	Cast-iron pipe, fittings	23	21	24	26	21
	511	Iron and steel pipe, fittings	29	26	25	32	22
	512	Iron and steel: Nails, wire	24	23	23	28	23
	513	Iron and steel, 5th class	28	27	25	33	27
	583	Railway car wheels, axles	25	20	32	36	29
	692	Furnace slag	52	53	51	55	69
	693	Scrap iron and scrap steel	40	39	40	43	40
15		Iron and Steel	30	28	31	34	29
	520	Copper: Ingot, matte, pig	45	35	56	48	33
	521	Copper, brass, and bronze	27	20	22	47	9
	522	Lead and zinc: Ingot, bar	45	40	43	47	47
	523	Aluminum: Ingot, pig, slab	29	26	39	24	26
16		All Other Metals	43	35	44	48	39
	530	Machinery and boilers	17	16	16	18	15
	580	Agricultural implements, etc.	15	15	17	15	16
	581	Vehicles, horse-drawn, etc.	12	11	14	13	18
	582	Tractors and parts	16	14	15	17	14
	590	Automobiles (passenger)	6	5	5	6	6
	591	Autotrucks	8	8	8	8	6
	592	Automobiles, K.D. and parts	17	16	19	20	14
	593	Automobile tires	14	14	11	15	12
	610	Furniture, metal	11	10	11	12	9
	611	Furniture, not metal	7	7	7	8	7
	697	Building woodwork	20	18	19	22	18
17		Appliances	11	11	11	12	9
	540	Cement, building	38	37	37	39	34
	550	Brick, common	35	37	34	35	36
	551	Brick and building tile	35	35	29	34	36
	552	Artificial stone, N.O.S.	24	22	30	27	32
	560	Lime, common, quick, slaked	23	23	24	23	22
	561	Plaster, stucco, etc.	26	25	29	28	23
18		Building Materials	34	33	34	35	31
	380	Salt	27	28	26	28	26
	470	Sugar (beet or cane)	30	27	25	33	27
	471	Table sirups and molasses	30	31	28	30	24
	472	Molasses, blackstrap, etc.	45	41	45	46	41
	620	Beverages	19	18	20	20	17
	630	Ice	27	29	22	25	34
	680	Canned food products	24	22	21	28	20
19		Manufactured Food	27	25	25	30	24
	650	Newsprint paper	26	25	25	27	25
	651	Printing paper, N.O.S.	24	24	22	24	25
	694	Paper bags, wrapping paper	22	21	21	23	23
	695	Paperboard and wallboard	21	20	21	23	20
	696	Building paper and roofing	22	22	21	23	23
20		Paper and Products	23	23	22	25	22
	440	Rosin	23	25	21	27	25
	441	Turpentine	24	22	24	26	27
	660	Alcohol, denatured or wood	21	20	22	23	22
	662	Explosives, N.O.S.	15	14	16	16	13
	691	Paints, oils and varnishes	22	19	23	27	24
21		Chemicals	21	19	22	23	21
	271	Leather	17	17	17	18	15
	670	Cotton cloth and fabrics	10	10	9	14	11
	671	Bagging and bags	18	16	17	19	19
22		Textiles and Leather	13	14	10	17	13
	570	Sewer pipe and draintile	18	19	17	18	16
	699	Glass, flat, not plate	30	24	27	31	51
	700	Glass: Bottles, jars, etc.	18	19	17	17	17
23		Glass and Tile	19	19	17	19	22
	690	Tobacco, manufactured	18	18	18	19	17
	698	Soap and washing compounds	20	20	20	21	19
	701	Manufactures, miscellaneous	20	20	20	20	21
24		Miscellaneous	20	20	20	20	21

Analysis 45.2 Average Haul of All Railway Traffic, in Miles - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EASTERN	SOUTHERN	WESTERN	POCAHONTAS
		ALL COMMODITIES	199	162	197	242	284
	10	Wheat	319	183	242	263	333
	20	Corn	291	207	156	232	223
	30	Oats	329	251	208	171	281
	40	Barley and rye	276	216	233	209	355
	162	Flaxseed	304	109	312	255	257
	163	Sugar beets	46	35	281	42	-
01		Bulk Grain and Beets	275	201	200	214	297
	41	Rice	320	265	280	190	243
	42	Grain, N.O.S.	505	254	339	343	413
	50	Flour, wheat	568	285	216	296	321
	51	Meal, corn	455	236	249	283	214
	52	Flour and meal, edible	567	245	262	313	416
	60	Cereal food preparations	627	239	357	407	346
	61	Mill products, N.O.S.	407	220	239	238	293
02		Other Cereals	502	256	232	276	312
	70	Hay and alfalfa	374	209	246	193	294
	71	Straw	209	123	210	136	182
	80	Tobacco, leaf	366	241	190	185	254
	90	Cotton in bales	410	223	232	225	275
	91	Cotton linters, noils, etc.	692	286	287	284	250
03		Cotton, Hay and Tobacco	402	216	227	215	262
	110	Oranges and grapefruit	2,125	366	466	851	139
	111	Lemons, limes, and citrus	2,386	568	334	735	291
	120	Apples, fresh	1,162	294	324	705	190
	121	Bananas	694	243	557	319	281
	122	Berries, fresh	1,199	342	420	628	115
	123	Cantaloupes and melons	2,433	530	402	658	203
	124	Grapes, fresh	2,597	481	423	840	388
	125	Peaches, fresh	842	364	274	414	149
	126	Watermelons	1,084	384	319	358	144
	127	Fruits, fresh, domestic	1,754	491	417	697	256
	128	Fruits, fresh, tropical	1,519	293	380	643	290
	130	Potatoes, other than sweet	741	177	293	465	253
	140	Cabbage	969	298	459	460	129
	141	Onions	1,012	337	369	461	335
	142	Tomatoes	1,893	458	579	539	137
	143	Vegetables, fresh, N.O.S.	2,063	466	442	661	167
04		Perishables	1,425	319	418	651	171
	150	Beans and peas, dried	888	233	297	620	385
	151	Fruits, dried or evaporated	833	331	382	472	527
	152	Vegetables, dry, N.O.S.	688	289	318	396	336
	161	Peanuts	715	221	231	345	402
	164	Products of agriculture	426	260	250	249	543
	282	Animal products, N.O.S.	457	220	310	345	227
	640	Fertilisers, N.O.S.	285	157	161	252	183
05		Miscellaneous Farm Products	420	209	192	329	290
	170	Horses, mules, ponies	594	323	243	371	163
	180	Cattle and calves, single-deck	406	333	186	284	244
	181	Calves, double-deck	554	419	203	271	89
	190	Sheep, goats, single-deck	453	252	137	317	320
	191	Sheep, goats, double-deck	639	350	147	410	232
	200	Hogs, single-deck	243	265	179	200	167
	201	Hogs, double-deck	541	424	231	323	129
	230	Poultry, live	1,207	570	281	385	332
	260	Wool	851	218	291	595	459
	270	Hides, green	620	268	331	335	306
	281	Animals, live, N.O.S.	339	146	362	462	99
06		Live Animals	465	348	214	303	259
	210	Fresh meats, N.O.S.	917	441	351	369	373
	220	Meats, cured, dried, etc.	1,010	438	343	499	445
	221	Butterine and margarine	760	339	423	486	305
	222	Packing-house products	796	383	318	362	443
	231	Poultry, dressed	1,232	447	266	410	376
	240	Eggs	1,353	434	282	546	471
	250	Butter	927	388	282	367	480
	251	Cheese	818	323	281	268	461
07		Animal Products, Edible	952	422	332	396	415
	290	Anthracite coal	174	116	169	171	90
	300	Bituminous coal	361	151	193	169	300
	310	Coke	182	98	221	138	202
08		Coal and Coke	318	140	193	168	299
	320	Iron ore	133	88	26	82	133
	330	Copper ore concentrates	29	158	48	22	614
	331	Lead ore and concentrates	52	35	169	35	403
	332	Zinc ore and concentrates	351	84	205	287	326
	333	Ores and concentrates	478	234	275	270	304
	392	Products of mines, N.O.S.	225	120	206	167	130
09		Ores	194	113	188	117	143
	350	Gravel and sand	69	63	59	50	76
	351	Stone, broken, ground, etc.	86	61	70	73	67
	352	Stone, rough, N.O.S.	136	76	141	115	127
	353	Stone, finished, N.O.S.	520	231	196	193	280
10		Sand, Stone and Gravel	83	70	69	59	79
	390	Phosphate rock, crude, etc.	111	102	93	274	274
	391	Sulphur (brimstone)	245	212	210	159	242
	661	Sulphuric acid	161	73	202	96	118
11		Sulphur and Sulphuric Acid	157	107	109	150	155
	360	Petroleum, crude	403	149	189	275	102
	370	Asphalt (natural, by-products)	295	133	233	213	170
	450	Petroleum oils, refined	350	122	167	246	141
	451	Fuel, road, and residual oils	283	81	139	103	141
	452	Lubricating oils, etc.	487	188	257	309	227
	453	Petroleum products	418	192	241	306	174
12		Petroleum and Products	347	123	173	249	149
	400	Logs	55	95	70	45	161
	401	Posts, poles, and piling	504	172	250	300	223
	402	Wood (fuel)	89	84	68	82	77
	410	Ties, railroad	313	177	147	206	141
	420	Pulpwood	348	103	84	121	110
	430	Lumber, shingles, and lath	746	212	254	452	202
	431	Box, crate, and cooperage	635	232	256	376	234
	432	Veneer and built-up wood	1,225	31[illegible]	276	801	323
	442	Crude rubber (unreclaimed)	552	263	171	339	616
	443	Products of forests, N.O.S.	322	197	119	250	168
13		Forest Products	452	198	213	298	186
	100	Cottonseed	101	118	74	100	367
	101	Cottonseed meal and cake	462	334	201	231	348
	160	Vegetable - oil cake, etc.	398	240	332	229	518
	460	Cottonseed oil	520	225	265	290	143
	461	Linseed oil	511	180	441	427	249
	462	Vegetable oils, N.O.S.	1,075	309	441	696	244
	280	Fish or sea-animal oil	966	251	178	740	418
14		Oils - Vegetable and Animal	391	270	185	256	289
	490	Iron, pig	202	107	179	187	163
	491	Iron and steel, 6th class	98	82	45	54	217
	500	Rails, fastenings, etc.	335	152	192	181	159
	510	Cast-iron pipe and fittings	595	179	265	347	242
	511	Iron and steel pipe, fittings	521	221	265	254	216
	512	Iron and steel: Nails, wire	422	183	225	273	226
	513	Iron and steel, 5th class'	306	161	216	228	242
	583	Railway car wheels, axles	281	157	184	184	153
	692	Furnace slag	85	44	144	51	51
	693	Scrap iron and scrap steel	140	92	135	108	140
15		Iron and Steel	260	139	192	205	191
	520	Copper; Ingot, matte, pig	1,181	175	536	536	474
	521	Copper, brass and bronze	372	186	201	238	225
	522	Lead and zinc: Ingot, bar	952	271	286	526	415
	523	Aluminum: Ingot, pig, slab	809	237	256	209	303
16		All Other Metals	919	236	307	505	394
	530	Machinery and boilers	587	233	258	382	236
	580	Agricultural implements, etc.	589	280	271	339	370
	581	Vehicles, horse-drawn, etc.	706	404	250	298	291
	582	Tractors and parts	673	251	271	406	380
	590	Automobiles (passenger)	822	269	248	494	400
	591	Autotrucks	906	344	243	588	346
	592	Automobiles, K.D. and parts	665	218	296	566	340
	593	Automobile tires	912	274	297	576	326
	610	Furniture, metal	649	264	313	342	299
	611	Furniture, not metal	803	244	289	408	332
	697	Building woodwork	1,450	367	293	648	318
17		Appliances	723	244	277	480	321
	540	Cement, building	195	87	147	126	123
	550	Brick, common	186	124	101	128	77
	551	Brick and building tile	317	180	176	182	166
	552	Artificial stone, N.O.S.	347	182	175	206	136
	560	Lime, common, quick, slaked	354	206	178	164	164
	561	Plaster, stucco, etc.	468	172	234	320	189
18		Building Material	234	118	149	143	137
	380	Salt	483	203	266	239	223
	470	Sugar (beet or cane)	566	258	201	391	459
	471	Table sirups and molasses	716	327	383	363	500
	472	Molasses, blackstrap, etc.	346	171	430	189	464
	620	Beverages	433	244	276	271	370
	630	Ice	50	47	44	44	35
	680	Canned food products	679	279	273	395	388
19		Manufactured Food	510	234	245	316	362
	650	Newsprint paper	707	175	259	358	217
	651	Printing paper, N.O.S.	518	216	259	322	323
	694	Paper bags, wrapping paper	592	198	258	335	259
	695	Paperboard, wallboard	458	178	288	267	207
	696	Building paper and roofing	420	168	243	268	246
20		Paper and Products	546	187	267	319	247
	440	Rosin	539	172	249	282	228
	441	Turpentine	1,037	183	398	562	142
	660	Alcohol, denatured or wood	526	201	272	363	303
	662	Explosives, N.O.S.	482	156	215	287	254
	691	Paints in oil and varnishes	639	236	261	445	273
21		Chemicals	575	197	269	360	247
	271	Leather	617	224	390	158	299
	670	Cotton cloth and fabrics	650	162	275	374	312
	671	Bagging, and bags	592	265	275	326	448
22		Textiles and Leather	624	205	280	324	336
	570	Sewer pipe and draintile	341	212	157	138	171
	699	Glass, flat, not plate	620	232	218	361	360
	700	Glass: Bottles, jars, etc.	560	248	240	306	261
23		Glass and Tile	497	238	200	252	271
	690	Tobacco, manufactured	1,259	250	306	790	428
	698	Soap and washing compounds	495	209	282	371	373
	701	Manufactures, miscellaneous	474	222	241	301	255
24		Miscellaneous	479	221	245	307	261

Analysis 45.3 Average Revenue of All Railway Traffic, per Ton Mile - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
			$	$	$	$	$
		ALL COMMODITIES	.0104	.0106	.0106	.0113	.0061
	10	Wheat	.0104	.0097	.0100	.0106	.0078
	20	Corn	.0105	.0095	.0147	.0106	.0087
	30	Oats	.0092	.0076	.0108	.0113	.0073
	40	Barley and rye	.0105	.0103	.0106	.0106	.0071
	162	Flaxseed	.0124	.0139	.0083	.0124	.0126
	163	Sugar beets	.0136	.0191	.0149	.0132	-
01		Bulk Grain and Beets	.0104	.0092	.0117	.0108	.0079
	41	Rice	.0130	.0110	.0100	.0140	.0113
	42	Grain, N.O.S.	.0094	.0087	.0080	.0105	.0085
	50	Flour, wheat	.0068	.0072	.0107	.0058	.0079
	51	Meal, corn	.0061	.0064	.0067	.0051	.0106
	52	Flour and meal	.0073	.0071	.0102	.0064	.0057
	60	Cereal food preparations	.0095	.0107	.0088	.0083	.0075
	61	Mill products, N.O.S.	.0070	.0077	.0090	.0059	.0074
02		Other Cereals	.0072	.0076	.0099	.0062	.0077
	70	Hay and alfalfa	.0138	.0141	.0117	.0141	.0115
	71	Straw	.0174	.0184	.0115	.0169	.0152
	80	Tobacco, leaf	.0220	.0182	.0249	.0218	.0176
	90	Cotton in bales	.0180	.0103	.0148	.0207	.0089
	91	Cotton linters, noils	.0106	.0081	.0117	.0124	.0090
03		Cotton, Hay and Tobacco	.0167	.0132	.0164	.0187	.0147
	110	Oranges and grapefruit	.0125	.0106	.0167	.0118	.0149
	111	Lemons, limes, and citrus	.0109	.0094	.0099	.0112	.0202
	120	Apples, fresh	.0126	.0126	.0118	.0125	.0173
	121	Bananas	.0216	.0268	.0183	.0246	.0277
	122	Berries, fresh	.0207	.0182	.0366	.0155	.0422
	123	Cantaloupes and melons	.0118	.0106	.0119	.0324	.0198
	124	Grapes, fresh	.0115	.0112	.0099	.0116	.0248
	125	Peaches, fresh	.0181	.0155	.0202	.0188	.0191
	126	Watermelons	.0114	.0077	.0119	.0150	.0130
	127	Fruits, fresh, domestic	.0126	.0112	.0109	.0131	.0166
	128	Fruits, fresh, tropical	.0121	.0151	.0107	.0128	.0133
	130	Potatoes, other than sweet	.0123	.0154	.0137	.0104	.0107
	140	Cabbage	.0138	.0139	.0171	.0121	.0164
	141	Onions	.0116	.0125	.0129	.0108	.0127
	142	Tomatoes	.0133	.0122	.0163	.0121	.0155
	143	Vegetables, fresh, N.O.S.	.0128	.0121	.0193	.0120	.0167
04		Perishables	.0127	.0126	.0162	.0120	.0147
	150	Beans and peas, dried	.0107	.0121	.0134	.0099	.0109
	151	Fruits, dried or evaporated	.0111	.0125	.0094	.0110	.0087
	152	Vegetables, dry, N.O.S.	.0143	.0141	.0180	.0128	.0120
	161	Peanuts	.0150	.0154	.0166	.0142	.0119
	164	Products of agriculture	.0117	.0114	.0116	.0125	.0073
	282	Animal products, N.O.S.	.0167	.0182	.0158	.0152	.0132
	640	Fertilizers, N.O.S.	.0111	.0121	.0126	.0079	.0093
05		Miscellaneous Farm Products	.0121	.0129	.0131	.0112	.0093
	170	Horses, mules, ponies	.0198	.0288	.0221	.0175	.0392
	180	Cattle and calves,single-deck	.0164	.0140	.0222	.0171	.0167
	181	Calves, double-deck	.0139	.0125	.0179	.0181	.0328
	190	Sheep and goats,single-deck	.0169	.0162	.0264	.0169	.0148
	191	Sheep and goats,double-deck	.0140	.0127	.0204	.0144	.0186
	200	Hogs, single-deck	.0230	.0166	.0237	.0242	.0218
	201	Hogs, double-deck	.0142	.0121	.0210	.0163	.0190
	230	Poultry, live	.0225	.0201	.0299	.0282	.0241
	260	Wool	.0209	.0205	.0189	.0218	.0130
	270	Hides, green	.0140	.0139	.0143	.0142	.0136
	281	Animals, live, N.O.S.	.0228	.0234	.0123	.0278	.0106
06		Live Animals	.0164	.0141	.0214	.0174	.0162
	210	Fresh meats, N.O.S.	.0164	.0162	.0185	.0163	.0181
	220	Meats, cured, dried	.0143	.0119	.0165	.0167	.0135
	221	Butterine and margarine	.0238	.0235	.0271	.0222	.0182
	222	Packing-house products	.0152	.0134	.0167	.0173	.0138
	231	Poultry, dressed	.0209	.0200	.0271	.0223	.0272
	240	Eggs	.0184	.0186	.0279	.0174	.0219
	250	Butter	.0217	.0208	.0279	.0227	.0221
	251	Cheese	.0201	.0175	.0238	.0239	.0165
07		Animal Products, Edible	.0172	.0165	.0186	.0180	.0161
	290	Anthracite coal	.0112	.0112	.0074	.0109	.0112
	300	Bituminous coal	.0065	.0068	.0063	.0080	.0053
	310	Coke	.0113	.0132	.0077	.0102	.0089
08		Coal and Coke	.0071	.0079	.0063	.0081	.0054
	320	Iron ore	.0082	.0072	.0178	.0094	.0051
	330	Copper ore concentrates	.0093	.0066	.0150	.0093	.0042
	331	Lead ore and concentrates	.0138	.0110	.0039	.0146	.0068
	332	Zinc ore and concentrates	.0065	.0072	.0075	.0060	.0051
	333	Ores and concentrates	.0066	.0068	.0059	.0068	.0045
	392	Products of mines, N.O.S.	.0082	.0089	.0067	.0077	.0086
09		Ores	.0080	.0084	.0068	.0080	.0076
	350	Gravel, sand, etc.	.0117	.0115	.0112	.0121	.0103
	351	Stone, broken, ground,etc.	.0103	.0123	.0101	.0088	.0107
	352	Stone, rough, N.O.S.	.0099	.0110	.0069	.0100	.0083
	353	Stone, finished, N.O.S.	.0097	.0096	.0089	.0111	.0078
10		Sand, Stone and Gravel	.0110	.0115	.0103	.0109	.0101
	390	Phosphate rock, crude, etc.	.0088	.0120	.0090	.0058	.0054
	391	Sulphur (brimstone)	.0079	.0103	.0082	.0074	.0115
	661	Sulphuric acid	.0156	.0245	.0097	.0169	.0152
11		Sulphur and Sulphuric Acid	.0100	.0171	.0091	.0086	.0127
	360	Petroleum, crude	.0080	.0118	.0106	.0075	.0136
	370	Asphalt (natural) etc.	.0125	.0141	.0105	.0112	.0118
	450	Petroleum oils, refined,etc.	.0150	.0189	.0194	.0129	.0195
	451	Fuel, road, residual oils	.0122	.0212	.0160	.0098	.0149
	452	Lubricating oils and grease	.0127	.0142	.0129	.0114	.0131
	453	Petroleum products, N.O.S.	.0125	.0137	.0100	.0110	.0142
12		Petroleum and Products	.0139	.0180	.0180	.0119	.0176

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
			$	$	$	$	$
	400	Logs	.0105	.0127	.0109	.0103	.0087
	401	Posts, poles, and piling	.0095	.0107	.0094	.0092	.0084
	402	Wood (fuel)	.0110	.0167	.0108	.0104	.0125
	410	Ties, railroad	.0105	.0186	.0119	.0109	.0153
	420	Pulpwood	.0089	.0117	.0074	.0077	.0088
	430	Lumber, shingles and lath	.0079	.0091	.0082	.0073	.0091
	431	Box, crate, and cooperage	.0102	.0089	.0127	.0097	.0078
	432	Veneer and built-up wood	.0074	.0087	.0100	.0066	.0093
	442	Crude rubber(unreclaimed)	.0134	.0133	.0168	.0138	.0084
	443	Products of forests, N.O.S.	.0118	.0125	.0109	.0111	.0112
13		Forest Products	.0086	.0099	.0090	.0079	.0091
	100	Cottonseed	.0212	.0127	.0236	.0199	.0139
	101	Cottonseed meal and cake	.0091	.0062	.0097	.0103	.0048
	160	Vegetable - oil cake, etc.	.0085	.0092	.0063	.0084	.0043
	460	Cottonseed oil	.0124	.0084	.0128	.0142	.0083
	461	Linseed oil	.0127	.0166	.0101	.0099	.0118
	462	Vegetable oils, N.O.S.	.0066	.0090	.0057	.0057	.0079
	280	Fish or sea-animal oil	.0079	.0098	.0141	.0062	.0088
14		Oils - Vegetable and Animal	.0106	.0084	.0125	.0108	.0061
	490	Iron, pig	.0095	.0118	.0071	.0070	.0081
	491	Iron and steel, 6th Class	.0147	.0156	.0130	.0114	.0122
	500	Rails, fastenings, etc.	.0111	.0132	.0103	.0085	.0152
	510	Cast-iron pipe and fittings	.0120	.0139	.0105	.0121	.0107
	511	Iron and steel pipe,fittings	.0148	.0135	.0123	.0166	.0128
	512	Iron and steel: Nails, wire	.0146	.0143	.0143	.0154	.0117
	513	Iron and steel, 5th Class	.0146	.0152	.0141	.0128	.0130
	583	Railway car wheels, axles	.0163	.0166	.0162	.0159	.0159
	692	Furnace slag	.0104	.0148	.0057	.0121	.0144
	693	Scrap iron and scrap steel	.0139	.0146	.0099	.0123	.0130
15		Iron and Steel	.0139	.0147	.0104	.0134	.0127
	520	Copper: Ingot, matte, pig	.0071	.0110	.0065	.0062	.0080
	521	Copper, brass, and bronze	.0144	.0172	.0197	.0112	.0176
	522	Lead and zinc: Ingot, Bar	.0061	.0070	.0062	.0057	.0051
	523	Aluminum: Ingot, pig, slab	.0159	.0164	.0139	.0279	.0090
16		All Other Metals	.0070	.0090	.0076	.0061	.0060
	530	Machinery and boilers	.0172	.0149	.0200	.0204	.0143
	580	Agricultural implements,etc.	.0178	.0143	.0176	.0208	.0120
	581	Vehicles, horse-drawn, etc.	.0176	.0122	.0236	.0240	.0121
	582	Tractors and parts	.0172	.0151	.0221	.0176	.0105
	590	Automobiles (passenger)	.0374	.0346	.0488	.0395	.0324
	591	Autotrucks	.0280	.0242	.0418	.0319	.0279
	592	Automobiles, K.D. and parts	.0165	.0166	.0165	.0163	.0151
	593	Automobile tires	.0181	.0174	.0239	.0182	.0161
	610	Furniture, metal	.0201	.0209	.0203	.0191	.0173
	611	Furniture, not metal	.0240	.0238	.0244	.0233	.0258
	697	Building woodwork (millwork)	.0075	.0086	.0011	.0068	.0118
17		Appliances	.0210	.0201	.0212	.0215	.0216
	540	Cement, building	.0140	.0155	.0103	.0140	.0119
	550	Brick, common	.0109	.0108	.0106	.0110	.0139
	551	Brick, and building tile	.0093	.0095	.0086	.0093	.0087
	552	Artificial stone, N.O.S.	.0113	.0111	.0112	.0115	.0120
	560	Lime, common (quick slaked)	.0097	.0090	.0087	.0117	.0100
	561	Plaster (stucco or wall) etc.	.0094	.0115	.0089	.0079	.0112
18		Building Material	.0122	.0126	.0099	.0126	.0107
	380	Salt	.0096	.0089	.0078	.0107	.0089
	470	Sugar (beet or cane)	.0119	.0133	.0123	.0116	.0083
	471	Table sirups and molasses	.0093	.0094	.0089	.0092	.0090
	472	Molasses, blackstrap, etc.	.0099	.0135	.0063	.0102	.0089
	620	Beverages	.0143	.0143	.0063	.0143	.0118
	630	Ice	.0227	.0209	.0149	.0237	.0305
	680	Canned food products	.0124	.0125	.0157	.0122	.0095
19		Manufactured Food	.0116	.0118	.0110	.0117	.0087
	650	Newsprint paper	.0098	.0112	.0105	.0077	.0127
	651	Printing paper, N.O.S.	.0117	.0117	.0134	.0116	.0105
	694	Paper bags, wrapping paper	.0119	.0129	.0115	.0110	.0103
	695	Paperboard, wallboard	.0116	.0127	.0514	.0112	.0109
	696	Building paper and roofing	.0131	.0135	.0134	.0128	.0108
20		Paper and Products	.0113	.0121	.0112	.0101	.0108
	440	Rosin	.0099	.0100	.0102	.0093	.0067
	441	Turpentine	.0118	.0107	.0125	.0116	.0098
	660	Alcohol, denatured or wood	.0133	.0147	.0108	.0114	.0131
	662	Explosvies, N.O.S.	.0379	.0337	.0393	.0422	.0342
	691	Paints, oil and varnishes	.0136	.0136	.0171	.0127	.0142
21		Chemicals	.0156	.0160	.0124	.0182	.0151
	271	Leather	.0159	.0152	.0195	.0224	.0141
	670	Cotton cloth and fabrics	.0197	.0224	.0195	.0180	.0146
	671	Bagging and bags	.0144	.0144	.0141	.0151	.0082
22		Textiles and Leather	.0173	.0174	.0185	.0159	.0129
	570	Sewer pipe and draintile	.0127	.0117	.0142	.0154	.0135
	699	Glass, flat, not plate	.0132	.0145	.0196	.0115	.0114
	700	Glass: Bottles, jars, etc.	.0127	.0117	.0172	.0146	.0135
23		Glass and Tile	.0127	.0120	.0163	.0142	.0128
	690	Tobacco, manufactured	.0182	.0220	.0217	.0139	.0223
	698	Soap and washing compounds	.0147	.0149	.0133	.0154	.0099
	701	Manufactures miscellaneous	.0139	.0139	.0143	.0144	.0113
24		Miscellaneous	.0140	.0139	.0146	.0144	.0117

Analysis 45.4 Average Revenue of All Railway Traffic, per Loaded Car Mile - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
		ALL COMMODITIES	$ .29	$ .31	$ .29	$ .27	$ .30
	10	Wheat	.46	.41	.42	.48	.31
	20	Corn	.44	.47	.58	.41	.33
	30	Oats	.31	.28	.30	.37	.20
	40	Barley and rye	.41	.33	.32	.43	.22
	162	Flaxseed	.47	.44	.19	.48	.14
	163	Sugar beets	.54	.70	.15	.53	-
01		Bulk Grain and Beets	.44	.39	.44	.45	.30
	41	Rice	.31	.25	.21	.35	.27
	42	Grain, N.O.S.	.25	.22	.19	.31	.24
	50	Flour, wheat	.17	.19	.20	.14	.17
	51	Meal, corn	.13	.15	.12	.12	.21
	52	Flour and meal	.17	.17	.15	.16	.11
	60	Cereal food preparations	.17	.18	.19	.16	.14
	61	Mill products, N.O.S.	.15	.17	.16	.14	.15
02		Other Cereals	.17	.18	.18	.15	.16
	70	Hay and alfalfa	.17	.17	.14	.19	.14
	71	Straw	.23	.24	.15	.24	.22
	80	Tobacco, leaf	.24	.23	.26	.32	.18
	90	Cotton in bales	.24	.16	.23	.26	.13
	91	Cotton linters, noils	.21	.16	.22	.26	.17
03		Cotton, Hay and Tobacco	.22	.18	.23	.24	.17
	110	Oranges and grapefruit	.22	.19	.28	.21	.26
	111	Lemons, limes, and citrus	.16	.14	.15	.16	.32
	120	Apples, fresh	.21	.20	.19	.22	.24
	121	Bananas	.23	.28	.19	.26	.29
	122	Berries, fresh	.31	.26	.46	.27	.30
	123	Cantaloupes and melons	.13	.12	.14	.13	.25
	124	Grapes, fresh	.16	.15	.14	.16	.35
	125	Peaches, fresh	.23	.18	.23	.25	.21
	126	Watermelons	.15	.10	.15	.19	.19
	127	Fruits, fresh, domestic	.17	.15	.14	.18	.24
	128	Fruits, fresh, tropical	.15	.20	.13	.17	.17
	130	Potatoes, other than sweet	.22	.29	.24	.18	.17
	140	Cabbage	.18	.17	.21	.16	.21
	141	Onions	.15	.16	.17	.15	.16
	142	Tomatoes	.14	.13	.17	.13	.18
	143	Vegetables, fresh, N.O.S.	.14	.14	.22	.14	.20
04		Perishables	.18	.18	.22	.17	.21
	150	Beans and peas, dried	.29	.30	.36	.29	.29
	151	Fruits, dried or evaporated	.35	.30	.31	.36	.17
	152	Vegetables, dry, N.O.S.	.19	.18	.25	.19	.16
	161	Peanuts	.23	.23	.24	.24	.17
	164	Products of agriculture	.25	.24	.24	.27	.16
	282	Animal products, N.O.S.	.32	.33	.26	.33	.24
	640	Fertilizers, N.O.S.	.32	.33	.33	.28	.24
05		Miscellaneous Farm Products	.28	.28	.29	.29	.20
	170	Horses, mules, ponies	.23	.34	.27	.21	.50
	180	Cattle and calves,single-deck	.19	.16	.25	.19	.19
	181	Calves, double-deck	.17	.16	.21	.21	.52
	190	Sheep and goats, single-deck	.12	.13	.22	.12	.10
	191	Sheep and goats, double-deck	.14	.12	.22	.14	.18
	200	Hogs, single-deck	.20	.16	.20	.20	.17
	201	Hogs, double-deck	.17	.15	.27	.20	.23
	230	Poultry, live	.20	.17	.30	.26	.24
	260	Wool	.31	.26	.26	.35	.20
	270	Hides, green	.32	.31	.33	.33	.30
	281	Animals, live, N.O.S.	.35	.33	.28	.49	.18
06		Live Animals	.19	.17	.25	.19	.19
	210	Fresh meats, N.O.S.	.20	.19	.24	.20	.24
	220	Meats, cured, dried	.22	.18	.23	.28	.20
	221	Butterine and margarine	.27	.23	.34	.32	.23
	222	Packing-house products	.25	.22	.26	.30	.22
	231	Poultry, dressed	.24	.23	.33	.26	.34
	240	Eggs	.22	.22	.29	.22	.23
	250	Butter	.26	.25	.34	.28	.27
	251	Cheese	.28	.24	.38	.36	.22
07		Animal Products, Edible	.22	.21	.25	.24	.23
	290	Anthracite coal	.54	.55	.27	.33	.54
	300	Bituminous coal	.34	.37	.32	.32	.31
	310	Coke	.35	.41	.25	.32	.27
08		Coal and Coke	.36	.41	.31	.32	.31
	320	Iron ore	.51	.47	1.04	.55	.35
	330	Copper ore concentrates	.48	.25	.68	.50	.15
	331	Lead ore and concentrates	.66	.55	.20	.70	.30
	332	Zinc ore and concentrates	.32	.34	.37	.31	.28
	333	Ores and concentrates	.32	.32	.31	.33	.24
	392	Products of mines, N.O.S.	.35	.39	.24	.33	.36
09		Ores	.37	.39	.26	.38	.34
	350	Gravel, sand, etc.	.63	.62	.56	.66	.60
	351	Stone, broken, ground, etc.	.55	.67	.55	.46	.59
	352	Stone, rough, N.O.S.	.38	.43	.25	.41	.30
	353	Stone, finished, N.O.S.	.29	.29	.25	.36	.19
10		Sand, Stone and Gravel	.54	.55	.50	.57	.52
	390	Phosphate rock, crude, etc.	.43	.48	.43	.35	.27
	391	Sulphur (brimestone)	.36	.40	.34	.35	.57
	661	Sulphuric acid	.75	1.08	.49	.78	.80
11		Sulphur and Sulphuric Acid	.47	.71	.44	.41	.66
	360	Petroleum, crude	.27	.37	.35	.26	.52
	370	Asphalt (natural) etc.	.42	.46	.36	.39	.41
	450	Petroleum oils, refined, etc.	.40	.52	.53	.34	.53
	451	Fuel, road, residual oil	.39	.65	.50	.32	.45
	452	Lubricating oils and grease	.27	.31	.26	.25	.25
	453	Petroleum products, N.O.S.	.29	.33	.29	.25	.36
12		Petroleum and Products	.39	.49	.50	.33	.48

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
			$	$	$	$	$
	400	Logs	.36	.36	.32	.37	.14
	401	Posts, poles, and piling	.25	.32	.26	.23	.27
	402	Wood (fuel)	.31	.41	.29	.31	.41
	410	Ties, railroad	.34	.27	.35	.37	.49
	420	Pulpwood	.28	.32	.23	.27	.27
	430	Lumber, shingles, and lath	.20	.21	.02	.19	.22
	431	Box, crate, and cooperage	.23	.19	.27	.23	.17
	432	Veneer and built-up wood	.17	.19	.20	.16	.21
	442	Crude rubber (unreclaimed)	.49	.49	.52	.44	.31
	443	Products of forests, N.O.S.	.21	.21	.23	.20	.20
13		Forest Products	.22	.24	.22	.20	.23
	100	Cottonseed	.59	.38	.60	.58	.27
	101	Cottonseed meal and cake	.23	.16	.23	.26	.11
	160	Vegetable - oil cake, etc.	.21	.24	.14	.18	.16
	460	Cottonseed oil	.34	.23	.33	.42	.24
	461	Linseed oil	.32	.41	.27	.26	.28
	462	Vegetable oils, N.O.S.	.19	.26	.17	.17	.23
	280	Fish or sea-animal oil	.23	.26	.41	.19	.29
14		Oils - Vegetable and Animal	.28	.23	.31	.30	.16
	490	Iron, pig	.50	.60	.39	.38	.43
	491	Iron and steel, 6th Class	.66	.69	.67	.54	.35
	500	Rails, fastenings, etc.	.36	.37	.35	.32	.54
	510	Cast-iron pipe and fittings	.28	.30	.25	.32	.23
	511	Iron and steel pipe,fittings	.43	.36	.30	.54	.28
	512	Iron and steel: Nails, wire	.36	.53	.33	.44	.27
	513	Iron and steel, 5th Class	.41	.41	.36	.43	.36
	583	Railway car wheels, axles	.42	.34	.05	.57	.47
	592	Furnace slag	.55	.79	.29	.67	1.00
	693	Scrap iron and scrap steel	.55	.58	.40	.53	.53
15		Iron and Steel	.42	.42	.33	.45	.37
	520	Copper: Ingot, matte, pig	.32	.39	.36	.30	.26
	521	Copper, brass, and bronze	.39	.34	.44	.53	.16
	522	Lead & zinc: Ingot, Bar	.27	.28	.27	.27	.24
	523	Aluminum: Ingot, pig, slab	.46	.43	.54	.68	.23
16		All Other Metals	.30	.31	.33	.29	.23
	530	Machinery and boilers	.29	.24	.33	.38	.22
	580	Agricultural implements,etc.	.27	.21	.30	.31	.19
	581	Vehicles, horse-drawn, etc.	.22	.14	.33	.33	.22
	582	Tractors and parts	.28	.22	.35	.30	.15
	590	Automobiles (passenger)	.22	.20	.29	.24	.20
	591	Autotrucks	.23	.20	.34	.26	.19
	592	Automobiles, K.D. and parts	.29	.27	.32	.32	.22
	593	Automobile tires	.26	.25	.28	.28	.20
	610	Furniture, metal	.23	.22	.24	.24	.16
	611	Furniture, not metal	.18	.18	.17	.19	.18
	697	Building woodwork (millwork)	.15	.15	.22	.15	.21
17		Appliances	.24	.22	.26	.26	.19
	540	Cement, building	.54	.57	.39	.56	.41
	550	Brick, common	.39	.40	.36	.39	.51
	551	Brick, and building tile	.32	.33	.25	.32	.31
	552	Artificial stone, N.O.S.	.27	.25	.36	.32	.39
	560	Lime, common (quick, slaked)	.23	.21	.21	.28	.22
	561	Plaster (stucco or wall) etc.	.25	.29	.26	.22	.26
18		Building Material	.41	.42	.33	.45	.34
	380	Salt	.26	.25	.20	.30	.23
	470	Sugar (beet or cane)	.36	.36	.31	.38	.22
	471	Table sirups and molasses	.28	.29	.25	.28	.22
	472	Molasses, blackstrap, etc.	.44	.56	.29	.48	.37
	620	Beverages	.28	.26	.31	.29	.21
	630	Ice	.62	.61	.70	.51	1.06
	680	Canned food products	.30	.27	.32	.34	.19
19		Manufactured Food	.32	.29	.28	.35	.21
	650	Newsprint paper	.26	.29	.27	.21	.32
	651	Printing paper, N.O.S.	.28	.28	.30	.28	.26
	694	Paper bags, wrapping paper	.27	.28	.25	.26	.23
	695	Paperboard, wallboard	.25	.26	.21	.26	.21
	696	Building paper and roofing	.29	.29	.29	.29	.25
20		Paper and Products	.26	.28	.24	.25	.24
	440	Rosin	.23	.25	.22	.25	.17
	441	Turpentine	.28	.24	.30	.30	.27
	660	Alcohol, denatured or wood	.28	.30	.24	.26	.29
	662	Explosives, N.O.S.	.59	.50	.64	.69	.45
	691	Paints oil and varnishes	.30	.26	.40	.35	.35
21		Chemicals	.33	.31	.27	.42	.32
	271	Leather	.28	.27	.34	.40	.22
	670	Cotton cloth and fabrics	.20	.23	.18	.25	.16
	671	Bagging and bags	.26	.24	.25	.29	.16
22		Textiles and Leather	.22	.24	.20	.28	.17
	570	Sewer pipe and draintile	.23	.22	.24	.27	.22
	699	Glass, flat, not plate	.39	.36	.53	.36	.58
	700	Glass: Bottles, jars, etc.	.24	.23	.30	.25	.23
23		Glass and Tile	.25	.23	.29	.27	.28
	690	Tobacco, manufactured	.34	.39	.39	.27	.40
	698	Soap and washing compounds	.30	.30	.27	.33	.19
	701	Manufactures miscellaneous	.28	.28	.29	.30	.24
24		Miscellaneous	.28	.28	.30	.30	.28

Analysis 45.5 Average Load of Railway Local Traffic, in Tons - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
		ALL COMMODITIES	32	32	31	27	57
	10	Wheat	44	42	41	44	43
	20	Corn	40	41	43	39	36
	30	Oats	39	49	32	33	24
	40	Barley and rye	39	33	35	40	39
	162	Flaxseed	37	24	9	38	1
	163	Sugar beets	40	36	7	40	-
01		Bulk Grain and Beets	42	43	39	42	39
	41	Rice	27	15	19	29	5
	42	Grain, N.O.S.	28	28	35	29	23
	50	Flour, wheat	25	27	18	25	22
	51	Meal, corn	23	27	18	23	18
	52	Flour and meal, edible	21	24	13	24	22
	60	Cereal food preparations	20	18	22	21	23
	61	Mill products, N.O.S.	22	22	17	23	21
02		Other Cereals	24	24	17	24	21
	70	Hay and alfalfa	13	12	12	13	13
	71	Straw	14	14	13	14	22
	80	Tobacco, leaf	11	13	10	14	9
	90	Cotton in bales	12	14	13	11	-
	91	Cotton linters, noils, etc.	18	12	18	21	26
03		Cotton, Hay and Tobacco	12	12	12	12	10
	110	Oranges and grapefruit	17	14	14	17	15
	111	Lemons, limes, and citrus	15	17	15	15	-
	120	Apples, fresh	15	12	14	17	14
	121	Bananas	10	10	10	10	10
	122	Berries, fresh	9	9	9	9	-
	123	Cantaloupes and melons	11	13	15	11	-
	124	Grapes, fresh	14	13	1	14	-
	125	Peaches, fresh	14	11	14	14	6
	126	Watermelons	12	14	13	12	16
	127	Fruits, fresh, domestic	15	15	9	15	15
	128	Fruits, fresh, tropical	12	11	24	13	-
	130	Potatoes, other than sweet	17	19	16	17	22
	140	Cabbage	12	13	11	12	15
	141	Onions	13	12	12	14	12
	142	Tomatoes	11	12	12	11	3
	143	Vegetables, fresh, N.O.S.	11	10	10	11	16
04		Perishables	14	13	11	15	15
	150	Beans and peas, dried	24	25	35	24	19
	151	Fruits, dried or evaporated	24	17	21	26	20
	152	Vegetables, dry, N.O.S.	12	10	12	15	14
	161	Peanuts	17	16	14	25	13
	164	Products of agriculture	23	22	21	24	28
	282	Animal products, N.O.S.	20	18	20	24	33
	640	Fertilizers, N.O.S.	26	26	24	36	25
05		Miscellaneous Farm Products	23	21	23	26	24
	170	Horses, mules, ponies	11	12	12	11	14
	180	Cattle and calves, single-deck	11	12	11	11	12
	181	Calves, double-deck	12	13	13	11	-
	190	Sheep, goats, single-deck	7	7	7	6	8
	191	Sheep, goats, double-deck	10	9	11	10	9
	200	Hogs, single-deck	8	8	7	8	7
	201	Hogs, double-deck	12	12	13	13	12
	230	Poultry, live	9	9	10	9	-
	260	Wool	14	12	14	15	-
	270	Hides, green	23	23	24	23	17
	281	Animals, live, N.O.S.	14	13	21	16	-
06		Live Animals	11	12	10	11	12
	210	Fresh meats, N.O.S.	12	12	12	12	12
	220	Meats, cured, dried, etc.	15	15	13	16	13
	221	Butterine and margarine	9	8	11	13	11
	222	Packing-house products	14	14	13	16	15
	231	Poultry, dressed	11	11	15	12	9
	240	Eggs	11	11	12	11	10
	250	Butter	12	12	10	12	12
	251	Cheese	14	12	13	14	7
07		Animal Products, Edible	13	13	13	13	13
	290	Anthracite coal	53	53	36	30	52
	300	Bituminous coal	54	54	50	45	60
	310	Coke	32	32	35	31	29
08		Coal and Coke	54	53	50	44	60
	320	Iron ore	57	56	58	57	58
	330	Copper ore concentrates	51	52	34	51	-
	331	Lead ore and concentrates	47	-	-	47	-
	332	Zinc ore and concentrates	51	41	7	53	2
	333	Ores and concentrates	51	46	58	52	56
	392	Products of mines, N.O.S.	49	50	43	46	51
09		Ores	50	50	48	51	52
	350	Gravel and sand	54	56	49	55	60
	351	Stone, broken, ground, etc.	55	56	56	54	59
	352	Stone, rough, N.O.S.	44	47	38	43	64
	353	Stone, finished, N.O.S.	38	32	39	39	29
10		Sand, Stone and Gravel	54	55	52	54	59
	390	Phosphate rock, crude, etc.	53	83	53	50	63
	391	Sulphur (brimstone)	54	38	40	57	51
	661	Sulphuric acid	48	46	51	45	53
11		Sulphur and Sulphuric Acid	52	43	53	54	52
	360	Petroleum, crude	35	31	34	36	40
	370	Asphalt (natural, by-products)	34	33	37	34	35
	450	Petroleum oils, refined	27	28	28	27	28
	451	Fuel, road, and residual oils	35	32	32	36	25
	452	Lubricating oils, etc.	21	21	18	21	20
	453	Petroleum products	22	22	34	21	29
12		Petroleum and Products	28	28	28	29	28
	400	Logs	35	26	30	37	36
	401	Posts, poles, and piling	26	28	27	25	26
	402	Wood (fuel)	28	25	25	29	33
	410	Ties, railroad	29	27	29	29	37
	420	Pulpwood	33	27	34	36	30
	430	Lumber, shingles, and lath	27	24	25	28	25
	431	Box, crate, and cooperage	23	19	21	24	24
	432	Veneer and built-up wood	23	20	19	24	24
	442	Crude rubber (unreclaimed)	35	35	1	30	-
	443	Products of forests, N.O.S.	19	16	25	18	21
13		Forest Products	28	26	26	29	28
	100	Cottonseed	28	10	25	29	28
	101	Cottonseed meal and cake	28	25	26	29	5
	160	Vegetable - oil cake, etc.	25	27	26	22	49
	460	Cottonseed oil	30	29	30	30	19
	461	Linseed oil	25	26	34	25	-
	462	Vegetable oils, N.O.S.	30	30	30	30	31
	280	Fish or sea-animal oil	27	25	14	31	-
14		Oils - Vegetable and Animal	28	28	27	29	33
	490	Iron, pig	53	52	56	49	59
	491	Iron and Steel, 6th class	43	40	58	46	21
	500	Rails, fastenings, etc.	31	28	34	38	26
	510	Cast-iron pipe and fittings	23	19	26	28	21
	511	Iron and steel pipe, fittings	26	26	13	29	19
	512	Iron and steel: Nails, wire	24	22	23	28	32
	513	Iron and steel, 5th class	28	27	23	30	28
	583	Railway car wheels, axles	24	20	36	31	38
	692	Furnace slag	53	55	44	55	70
	693	Scrap iron and scrap steel	41	41	39	43	45
15		Iron and Steel	31	30	34	34	36
	520	Copper: Ingot, matte, pig	50	35	63	53	4
	521	Copper, brass, and bronze	31	15	34	52	1
	522	Lead and zinc: Ingot, bar	43	36	26	49	51
	523	Aluminum: Ingot, pig, slab	22	21	41	22	-
16		All Other Metals	40	29	28	50	37
	530	Machinery and boilers	18	17	18	19	21
	580	Agricultural implements, etc.	13	13	19	13	17
	581	Vehicles, horse-drawn, etc.	10	10	13	13	19
	582	Tractors and parts	15	14	19	14	18
	590	Automobiles (passenger)	5	5	5	5	5
	591	Autotrucks	8	8	6	7	37
	592	Automobiles, K.D. and parts	14	13	16	20	17
	593	Automobile tires	14	14	13	15	-
	610	Furniture, metal	10	9	14	11	18
	611	Furniture, not metal	7	6	7	9	7
	697	Building woodwork	17	11	17	19	18
17		Appliances	11	10	9	12	9
	540	Cement, building	36	37	35	39	31
	550	Brick, common	37	40	35	36	36
	551	Brick and building tile	36	37	32	35	36
	552	Artificial stone, N.O.S.	29	28	36	32	30
	560	Lime, common, quick, slaked	25	25	22	24	26
	561	Plaster, stucco, etc.	26	25	27	28	20
18		Building Material	35	34	33	37	31
	380	Salt	30	30	30	30	26
	470	Sugar (beet or cane)	29	25	25	33	25
	471	Table sirups and molasses	30	33	27	28	25
	472	Molasses, blackstrap, etc.	47	46	45	48	38
	620	Beverages	20	22	21	20	18
	630	Ice	26	28	21	25	45
	680	Canned food products	23	21	22	26	20
19		Manufactured Food	27	25	25	29	23
	650	Newsprint paper	26	25	26	26	26
	651	Printing paper, N.O.S.	22	22	23	24	27
	694	Paper bags, wrapping paper	22	21	23	24	22
	695	Paperboard, wallboard	20	20	18	23	21
	696	Building paper and roofing	21	22	17	23	24
20		Paper and Products	22	21	18	24	25
	440	Rosin	16	24	14	32	-
	441	Turpentine	20	22	13	27	30
	660	Alcohol, denatured or wood	19	19	16	19	20
	662	Explosives, N.O.S.	15	15	29	14	12
	691	Paints in oil and varnishes	18	15	22	25	22
21		Chemicals	18	16	15	22	21
	271	Leather	17	17	17	24	18
	670	Cotton cloth and fabrics	10	13	10	14	24
	671	Bagging and bags	18	17	18	18	41
22		Textiles and Leather	15	16	12	17	23
	570	Sewer pipe and draintile	16	16	17	17	16
	699	Glass, flat, not plate	27	24	32	30	38
	700	Glass: Bottles, jars, etc.	17	17	19	17	17
23		Glass and Tile	18	17	18	18	25
	690	Tobacco, manufactured	18	18	17	21	18
	698	Soap and washing compounds	20	20	19	21	17
	701	Manufactures, miscellaneous	20	19	20	20	21
24		Miscellaneous	-	19	20	20	21

Analysis 45.6 Average Haul of Railway Local Traffic, in Miles - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
		ALL COMMODITIES	180	160	154	176	329
	10	Wheat	148	156	176	257	371
	20	Corn	174	169	135	188	207
	30	Oats	248	325	219	200	317
	40	Barley and rye	231	245	232	230	158
	162	Flaxseed	268	55	300	285	250
	163	Sugar beets	42	37	350	43	-
01		Bulk Grain and Beets	196	181	158	201	320
	41	Rice	108	295	198	102	273
	42	Grain, N.O.S.	310	319	260	303	400
	50	Flour, wheat	318	339	240	317	281
	51	Meal, corn	308	313	313	315	199
	52	Flour and meal, edible	324	321	300	347	358
	60	Cereal food preparations	344	309	494	366	138
	61	Mill products, N.O.S.	233	239	266	225	258
02		Other Cereals	274	300	262	262	267
	70	Hay and alfalfa	208	262	169	199	226
	71	Straw	116	76	213	139	129
	80	Tobacco, leaf	218	430	197	124	198
	90	Cotton in bales	237	70	167	263	-
	91	Cotton linters, noils, etc.	252	205	266	240	200
03		Cotton, Hay and Tobacco	223	242	185	237	199
	110	Oranges and grapefruit	906	126	612	1,082	750
	111	Lemons, limes, and citrus	587	173	474	601	-
	120	Apples, fresh	399	249	301	526	199
	121	Bananas	485	302	712	345	431
	122	Berries, fresh	467	318	339	631	-
	123	Cantaloupes and melons	677	350	352	750	-
	124	Grapes, fresh	432	198	90	485	-
	125	Peaches, fresh	248	372	361	235	300
	126	Watermelons	328	207	249	351	346
	127	Fruits, fresh, domestic	338	291	139	356	365
	128	Fruits, fresh, tropical	390	335	253	661	-
	130	Potatoes, other than sweet	372	234	244	498	365
	140	Cabbage	399	349	589	460	346
	141	Onions	391	349	539	443	209
	142	Tomatoes	364	289	531	350	63
	143	Vegetables, fresh, N.O.S.	525	353	639	676	528
04		Perishables	431	269	574	522	273
	150	Beans and peas, dried	317	228	131	403	328
	151	Fruits, dried or evaporated	136	438	527	122	385
	152	Vegetables, dry, N.O.S.	440	425	391	550	551
	161	Peanuts	159	209	127	254	70
	164	Products of agriculture	169	268	197	122	408
	282	Animal products, N.O.S.	207	199	282	209	293
	640	Fertilizers, N.O.S.	148	138	146	168	170
05		Miscellaneous Farm Products	169	435	156	156	197
	170	Horses, mules, ponies	390	332	309	407	161
	180	Cattle and calves, single-deck	304	390	191	296	245
	181	Calves, double-deck	422	584	152	243	-
	190	Sheep, goats, single-deck	260	221	137	278	190
	191	Sheep, goats, double-deck	390	401	126	391	277
	200	Hogs, single-deck	193	233	165	192	197
	201	Hogs, double-deck	359	472	227	321	153
	230	Poultry, live	738	815	236	681	-
	260	Wool	304	157	392	471	-
	270	Hides, green	336	347	370	317	354
	281	Animals, live, N.O.S.	173	151	875	367	-
06		Live Animals	305	400	196	291	240
	210	Fresh meats, N.O.S.	481	630	514	370	406
	220	Meats, cured, dried, etc.	691	851	604	482	541
	221	Butterine and margarine	610	565	984	655	416
	222	Packing-house products	471	502	481	427	418
	231	Poultry, dressed	480	631	353	400	900
	240	Eggs	452	530	323	422	625
	250	Butter	387	452	236	367	678
	251	Cheese	331	440	295	302	437
07		Animal Products, Edible	485	603	507	388	466
	290	Anthracite coal	116	116	159	171	250
	300	Bituminous coal	243	202	198	182	359
	310	Coke	94	80	199	88	236
08		Coal and Coke	203	154	198	174	358
	320	Iron ore	73	28	16	80	54
	330	Copper ore concentrates	21	91	134	21	-
	331	Lead ore and concentrates	33	10	-	33	-
	332	Zinc ore and concentrates	282	314	85	279	33
	333	Ores and concentrates	307	265	464	306	228
	392	Products of mines, N.O.S.	102	100	64	129	74
09		Ores	93	104	68	91	74
	350	Gravel and sand	54	55	63	50	66
	351	Stone, broken, ground, etc.	70	61	74	77	64
	352	Stone, rough, N.O.S.	35	19	72	107	65
	353	Stone, finished, N.O.S.	138	125	96	158	265
10		Sand, Stone and Gravel	59	53	68	58	65
	390	Phosphate rock, crude, etc.	75	23	75	413	605
	391	Sulphur (brimstone)	99	195	136	92	240
	661	Sulphuric acid	102	63	301	72	127
11		Sulphur and Sulphuric Acid	86	80	85	88	146
	360	Petroleum, crude	175	144	153	183	58
	370	Asphalt (natural, by-products)	148	129	241	194	108
	450	Petroleum oils, refined	164	120	166	205	149
	451	Fuel, road, and residual oils	117	64	105	176	126
	452	Lubricating oils, etc.	255	231	259	284	295
	453	Petroleum products	227	245	90	306	121
12		Petroleum and Products	159	115	164	199	147
	400	Logs	50	80	68	45	173
	401	Posts, poles, and piling	218	103	176	303	77
	402	Wood (fuel)	79	92	69	81	59
	410	Ties, railroad	134	96	108	169	70
	420	Pulpwood	102	95	72	119	147
	430	Lumber, shingles, and lath	240	161	165	305	177
	431	Box, crate, and cooperage	351	173	238	426	244
	432	Veneer and built-up wood	391	454	261	415	299
	442	Crude rubber (unreclaimed)	413	420	15	112	-
	443	Products of forests, N.O.S.	127	203	77	182	121
13		Forest Products	145	155	122	152	149
	100	Cottonseed	90	476	76	101	549
	101	Cottonseed meal and cake	195	198	156	231	76
	160	Vegetable - oil cake, etc.	260	249	515	251	431
	460	Cottonseed oil	276	389	259	279	383
	461	Linseed oil	289	243	403	363	-
	462	Vegetable oils, N.O.S.	463	443	566	495	690
	280	Fish or sea-animal oil	293	463	466	193	-
14		Oils - Vegetable and Animal	171	332	130	177	351
	490	Iron, pig	103	89	129	144	112
	491	Iron and steel, 6th class	59	59	132	58	266
	500	Rails, fastenings, etc.	130	205	104	84	93
	510	Cast-iron pipe and fittings	249	167	308	472	170
	511	Iron and steel pipe, fittings	237	234	285	250	97
	512	Iron and steel: Nails, wire	215	217	324	188	227
	513	Iron and steel, 5th class	158	159	242	131	360
	583	Railway car wheels, axles	123	153	159	89	114
	692	Furnace slag	50	45	112	40	52
	693	Scrap iron and scrap steel	76	69	110	92	138
15		Iron and Steel	119	119	152	109	134
	520	Copper: Ingot, matte, pig	324	132	294	406	125
	521	Copper, brass, and bronze	264	229	239	281	21
	522	Lead and zinc: Ingot, bar	355	276	407	423	671
	523	Aluminum: Ingot, pig, slab	327	399	162	273	-
16		All Other Metals	330	257	359	381	566
	530	Machinery and boilers	302	272	149	428	224
	580	Agricultural implements, etc.	334	322	362	329	596
	581	Vehicles, horse-drawn, etc.	602	812	275	354	275
	582	Tractors and parts	285	286	350	270	452
	590	Automobiles (passenger)	505	611	265	426	417
	591	Autotrucks	605	698	260	421	740
	592	Automobiles, K.D. and parts	296	271	478	498	255
	593	Automobile tires	594	520	363	855	-
	610	Furniture, metal	349	389	411	279	348
	611	Furniture, not metal	443	452	295	486	364
	697	Building woodwork	384	226	180	459	268
17		Appliances	360	340	257	425	352
	540	Cement, building	135	95	160	158	113
	550	Brick, common	110	124	83	130	71
	551	Brick and building tile	177	187	157	160	123
	552	Artificial stone, N.O.S.	217	247	113	202	106
	560	Lime, common, quick, slaked	225	277	133	192	151
	561	Plaster, stucco, etc.	264	161	252	381	234
18		Building Material	149	136	139	164	116
	380	Salt	246	246	160	247	358
	470	Sugar (beet or cane)	275	335	135	288	297
	471	Table sirups and molasses	362	458	501	268	803
	472	Molasses, blackstrap, etc.	150	133	397	127	358
	620	Beverages	213	258	126	205	386
	630	Ice	45	49	42	42	24
	680	Canned food products	302	349	340	267	268
19		Manufactured Food	223	250	168	214	270
	650	Newsprint paper	230	301	322	194	155
	651	Printing paper, N.O.S.	333	331	333	277	604
	694	Paper bags, wrapping paper	298	286	317	298	504
	695	Paperboard, wallboard	247	221	400	238	267
	696	Building paper and roofing	247	204	344	284	359
20		Paper and Products	276	265	366	253	415
	440	Rosin	140	118	128	230	-
	441	Turpentine	473	173	301	838	491
	660	Alcohol, denatured or wood	265	247	497	275	351
	662	Explosives, N.O.S.	259	172	317	351	54
	691	Paints in oil and varnishes	417	414	285	467	478
21		Chemicals	261	282	164	360	353
	271	Leather	475	439	613	318	520
	670	Cotton cloth and fabrics	222	190	224	420	502
	671	Bagging and bags	339	312	315	374	52
22		Textiles and Leather	316	314	283	375	190
	570	Sewer pipe and draintile	208	284	145	154	172
	699	Glass, flat, not plate	367	416	455	327	299
	700	Glass: Bottles, jars, etc.	343	369	274	239	224
23		Glass and Tile	297	353	154	191	255
	690	Tobacco, manufactured	521	395	579	1,599	501
	698	Soap and washing compounds	357	313	362	449	267
	701	Manufactures, miscellaneous	256	291	241	206	188
24		Miscellaneous	260	292	249	214	197

Analysis 45.7 Average Revenue of Railway Local Traffic, per Ton Mile - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
			$	$	$	$	$
		ALL COMMODITIES	.0124	.0134	.0132	.0138	.0062
	10	Wheat	.0122	.0138	.0132	.0121	.0085
	20	Corn	.0144	.0140	.0180	.0139	.0117
	30	Oats	.0100	.0078	.0118	.0121	.0086
	40	Barley and rye	.0115	.0120	.0111	.0115	.0170
	162	Flaxseed	.0136	.0233	.0151	.0135	.0300
	163	Sugar beets	.0137	.0195	.0224	.0134	-
01		Bulk Grain and Beets	.0125	.0124	.0155	.0124	.0091
	41	Rice	.0212	.0146	.0159	,0219	.0158
	42	Grain, N.O.S.	.0113	.0097	.0129	.0127	.0133
	50	Flour, wheat	.0076	.0084	.0112	.0066	.0095
	51	Meal, corn	.0061	.0066	.0074	.0048	.0144
	52	Flour and meal	.0083	.0083	.0122	.0057	.0077
	60	Cereal food preparations	.0093	.0114	.0060	.0078	.0182
	61	Mill products, N.O.S.	.0080	.0094	.0105	.0069	.0086
02		Other Cereals	.0081	.0089	.0106	.0072	.0096
	70	Hay and alfalfa	.0167	.0188	.0216	.0160	.0207
	71	Straw	.0212	.0300	.0196	.0182	.0248
	80	Tobacco, leaf	.0284	.0167	.0317	.0279	.0292
	90	Cotton in bales	.0225	.0425	.0248	.0219	-
	91	Cotton linters, noils	.0180	.0211	.0181	.0172	.0178
03		Cotton, Hay and Tobacco	.0216	.0194	.0267	.0202	.0287
	110	Oranges and grapefruit	.0168	.0253	.0192	.0164	.0064
	111	Lemons, limes, and citrus	.0167	.0460	.0295	.0163	-
	120	Apples, fresh	.0182	.0201	.0223	.0174	.0234
	121	Bananas	.0240	.0321	.0198	.0294	.0314
	122	Berries, fresh	.0468	.0516	.0575	.0406	-
	123	Cantaloupes and melons	.0173	.0205	.0196	.0170	-
	124	Grapes, fresh	.0200	.0321	.0850	.0189	-
	125	Peaches, fresh	.0244	.0298	.0406	.0233	.0383
	126	Watermelons	.0178	.0223	.0151	.0181	.0167
	127	Fruits, fresh, domestic	.0218	.0199	.0316	.0221	.0178
	128	Fruits, fresh, tropical	.0216	.0244	.0185	.0168	-
	130	Potatoes, other than sweet	.0157	.0228	.0254	.0128	.0161
	140	Cabbage	.0181	.0172	.0233	.0170	.0176
	141	Onions	.0154	.0167	.0143	.0138	.0202
	142	Tomatoes	.0215	.0246	.0204	.0192	.0853
	143	Vegetables, fresh, N.O.S.	.0192	.0209	.0226	.0176	.0164
04		Perishables	.0185	.0226	.0207	.0165	.0211
	150	Beans and peas, dried	.0166	.0167	.0223	.0164	.0166
	151	Fruits, dried or evaporated	.0199	.0193	.0174	.0200	.0179
	152	Vegetables, dry, N.O.S.	.0180	.0180	.0195	.0168	.0143
	161	Peanuts	.0281	.0203	.0338	.0213	.0400
	164	Products of Agriculture	.0150	.0146	.0143	.0156	.0116
	282	Animal products, N.O.S.	.0216	.0252	.0170	.0181	.0160
	640	Fertilizers, N.O.S.	.0156	,0178	.0167	.0106	.0135
05		Miscellaneous Farm Products	.0165	.0178	.0167	.0154	.0135
	170	Horses, mules, ponies	.0208	.0355	.0229	.0140	.0517
	180	Cattle and calves,single-deck	.0187	.0162	.0258	.0190	.0209
	181	Calves, double-deck	.0150	.0125	.0360	.0215	-
	190	Sheep and goats,single-deck	.0228	.0250	.0338	.0221	.0258
	191	Sheep and goats,double-deck	.0166	.0164	.0313	.0166	.0197
	200	Hogs, single-deck	.0265	.0243	.0299	.0265	.0241
	201	Hogs double-deck	.0169	.0146	.0233	.0180	.0251
	230	Poultry, live	.0267	.0220	.0457	.0434	-
	260	Wool	.0324	.0350	.0217	.0315	-
	270	Hides, green	.0165	.0165	.0186	.0164	.0179
	281	Animals, live, N.O.S.	.0326	.0326	.0146	.0350	-
06		Live Animals	.0192	.0165	.0262	.0197	.0211
	210	Fresh meats, N.O.S.	.0192	.0187	.0202	.0196	.0236
	220	Meats, cured, dried	.0137	.0108	.0181	.0195	.0178
	221	Butterine and margarine	.0251	,0252	.0227	.0253	.0358
	222	Packing-house products	.0201	.0191	.0197	.0218	.0205
	231	Poultry, dressed	.0303	.0218	,0400	.0374	.0207
	240	Eggs	.0301	.0230	.0421	.0337	.0225
	250	Butter	.0324	.0240	.0537	.0357	.0230
	251	Cheese	.0257	.0245	.0522	.0257	.0251
07		Animal Products, Edible	.0207	.0180	.0206	.0240	.0207
	290	Anthracite coal	.0118	.0118	.0093	.0114	.0078
	300	Bituminous coal	.0073	.0084	.0080	.0089	.0057
	310	Coke	.0155	.0183	.0091	.0146	.0111
08		Coal and Coke	.0081	.0099	.0080	.0091	.0057
	320	Iron Ore	.0101	.0100	.0281	.0098	.0064
	330	Copper ore, concentrates	.0106	.0138	.0138	.0106	-
	331	Lead ore and concentrates	.0145	.0098	-	.0145	-
	332	Zinc ore and concentrates	.0062	.0054	.0071	.0063	.0100
	333	Ores and concentrates,N.O.S.	.0070	.0087	.0053	.0250	.0075
	392	Products of mines, N.O.S.	.0104	.0107	.0123	.0094	.0115
09		Ores	.0098	.0105	.0112	.0091	.0107
	350	Gravel, sand etc.	.0132	.0136	.0124	.0134	.0119
	351	Stone, broken, ground, etc.	.0111	.0135	.0112	.0090	.0115
	352	Stone, rough, N.O.S.	.0162	.0207	.0014	.0124	.0114
	353	Stone, finished, N.O.S.	.0144	.0186	.0128	.0139	.0117
10		Sand, Stone and Gravel	.0125	.0139	.0119	.0119	.0118
	390	Phosphate rock, crude, etc.	.0092	.0379	.0092	.0053	.0084
	391	Sulphur (brimstone)	.0099	.0148	.0160	.0091	.0113
	661	Sulphuric acid	.0193	.0323	.0102	.0214	.0171
11		Sulphur and Sulphuric Acid	.0116	.0261	.0094	.0115	.0155
	360	Petroleum, crude	.0117	.0140	.0138	.0111	.0386
	370	Asphalt (natural) etc.	.0177	.0191	.0135	.0163	.0223
	450	Petroleum oils, refined,etc.	.0233	.0025	.0285	.0209	.0257
	451	Fuel, road, residual oils	.0197	.0311	.0237	.0148	.0263
	452	Lubricating oils and grease	.0163	.0175	.0192	.0147	.0186
	453	Petroleum products, N.O.S.	.0154	.0156	.0167	.0137	.0271
12		Petroleum and Products	.0212	.0241	.0263	.0184	.0252
	400	Logs	.0106	.0134	.0111	.0104	.0078
	401	Posts, poles, and piling	.0128	.0231	.0126	.0111	.0276
	402	Wood (fuel)	.0113	.0185	.0110	.0192	.01.3
	410	Ties, railroad	.0163	.0189	.0146	.0157	.0328
	420	Pulpwood	.0095	.0136	.0078	.0081	.0080
	430	Lumber, shingles, and lath	.0117	.0178	.0136	.0103	.0167
	431	Box, crate, and cooperage	.0115	.0180	.0112	.0114	.0145
	432	Veneer and built-up wood	.0103	.0128	.0143	.0098	.0138
	442	Crude rubber (unreclaimed)	.0151	.0015	.0204	.0178	-
	443	Products of forests, N.O.S.	.0140	.0182	.0115	.0119	.0153
13		Forest Products	.0117	.0163	.0123	.0105	.0135
	100	Cottonseed	.0219	.0407	.0246	.0205	.0156
	101	Cottonseed meal and cake	.0143	.0164	.0157	.0133	.0162
	160	Vegetable - oil cake, etc.	.0096	.0108	.0044	.0091	.0074
	460	Cottonseed oil	.0183	.0094	.0197	.0183	.0088
	461	Linseed oil	.0161	.0019	.0097	.0129	-
	462	Vegetable oils, N.O.S.	.0088	.0099	.0089	.0070	.0061
	280	Fish or sea-animal oil	.0143	.0104	.0250	.0198	-
14		Oils - Vegetable and Animal	.0163	.0112	.0194	.0161	.0073
	490	Iron, pig	.0126	.0156	.0056	.0094	.0161
	491	Iron and steel, 6th Class	.0176	.0216	.0084	.0111	.0126
	500	Rails, fastenings, frogs	.0163	.0150	.0225	.0165	.0310
	510	Cast-iron pipe and fittings	.0173	.0225	.0142	.0143	.0211
	511	Iron and steel pipefittings	.0182	.0172	.0199	.0224	.0372
	512	Iron and steel: Nails, wire	.0182	.0178	.0146	.0205	.0200
	513	Iron and steel, 5th Class	.0190	.0191	.0177	.0187	.0171
	583	Railway car wheels, axles	.0241	.0230	.0221	.0267	.0215
	692	Furnace slag	.0145	.0161	.0082	.0144	.0139
	693	Scrap iron and scrap steel	.0192	.0208	.0127	.0153	.0173
15		Iron and Steel	.0181	.0188	.0122	.0173	.0172
	520	Copper: Ingot, matte, pig	.0126	.0207	.0233	.0114	.0180
	521	Copper, brass, and bronze	.0138	.0224	.0266	.0104	.0310
	522	Lead and zinc: Ingot, Bar	.0089	.0102	.0119	.0080	.0088
	523	Aluminum: Ingot, pig, slab	.0261	.0223	.0302	.0315	-
16		All Other Metals	.0105	.0129	.0143	.0092	.0091
	530	Machinery and boilers	.0210	.0193	.0377	.0226	.0222
	580	Agricultural implements,etc.	.0226	,0203	.0206	.0247	.0127
	581	Vehicles, horse-drawn, etc.	.0141	.0091	.0325	.0293	.0231
	582	Tractors and parts	.0256	.0213	.0265	.0268	.0144
	590	Automobiles (passenger)	.0430	.0377	.0675	.0494	.0526
	591	Autotrucks	.0302	.0249	.0774	.0486	.0195
	592	Automobiles, K.D. and parts	.0207	.0217	.0280	.0156	.0354
	593	Automobile tires	.0197	.0199	.0408	.0190	-
	610	Furniture, metal	.0257	.0258	.0264	.0253	.0214
	611	Furniture, not metal	.0297	.0301	.0430	.0267	.0349
	697	Building woodwork(millwork)	.0152	.0297	.0303	.0122	.0221
17		Appliances	.0258	.0244	.0419	.0259	.0332
	540	Cement, building	.0175	.0218	.0155	.0160	.0216
	550	Brick, common	.0140	.0139	.0155	.0129	.0173
	551	Brick, and building tile	.0126	.0124	.0123	.0134	.0140
	552	Artificial stone, N.O.S.	.0136	.0138	.0187	.0127	.0202
	560	Lime, common (quick slaked)	.0122	.0104	.0171	.0142	.0157
	561	Plaster, stucco, wall,etc.	.0123	.0170	.0113	.0097	.0175
18		Building Material	.0157	.0163	.0151	.0152	.0098
	380	Salt	.0121	.0114	.0200	.0126	.0100
	470	Sugar (beet or cane)	.0163	.0156	.0154	.0168	.0168
	471	Table sirups and molasses	.0109	.0093	.0114	.0126	.0108
	472	Molasses, blackstrap, etc.	.0148	.0197	.0098	.0144	.0152
	620	Beverages	.0181	.0168	.0312	.0180	.0172
	630	Ice	.0236	.0214	.0333	.0244	.0392
	680	Canned food products	.0174	.0165	.0547	.0180	.0196
19		Manufactured Food	.0159	.0151	.0159	.0164	.0173
	650	Newsprint paper	.0154	.0152	.0181	.0148	.0215
	651	Printing paper, N.O.S.	.0152	.0153	.0186	.0164	.0112
	694	Paper bags, wrapping paper	.0156	.0163	.0161	.0150	.0125
	695	Paperboard, wallboard	.0153	.0167	.0131	.0142	.0145
	696	Building paper and roofing	.0165	.0177	.0159	.0153	.0142
20		Paper and Products	.0155	.0161	.0149	.0150	.0127
	440	Rosin	.0209	.0219	.0226	.0147	-
	441	Turpentine	.0169	.0230	.0216	.0139	.0151
	660	Alcohol, denatured or wood	.0171	.0177	.0129	.0163	.0195
	662	Explosives, N.O.S.	.0430	.0449	.0263	.0460	.1470
	691	Paints, oil and varnishes	.0160	.0159	.0205	.0151	.0142
21		Chemicals	.0201	.0189	.0217	.0207	.0199
	271	Leather	.0207	.0192	.0241	.0213	.0178
	670	Cotton cloth and fabrics	.0306	.0262	.0327	.0237	.0210
	671	Bagging and bags	.0176	.0181	.0163	.0179	.0187
22		Textiles and Leather	.0216	.0199	.0260	.0183	.0195
	570	Sewer pipe and draintile	.0162	.0145	.0195	.0181	.0185
	699	Glass, flat, not plate	.0168	.0166	.0114	.0183	.0166
	700	Glass: Bottles, jars, etc.	.0150	.0146	.0248	.0164	.0211
23		Glass and Tile	.0155	.0148	.0198	.0174	.0182
	690	Tobacco, manufactured	.0281	.0277	.0312	.0150	.0300
	698	Soap and washing compounds	.0167	.0167	.0174	.0165	.0199
	701	Manufactures miscellaneous	,0176	.0178	.0172	.0175	.0180
24		Miscellaneous	.0176	.0178	.0172	.0175	.0188

Analysis 45.8 Average Revenue of Railway Local Traffic, per Loaded Car Mile - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
		ALL COMMODITIES	$ .40	$ .43	$ .42	$ .37	$ .36
	10	Wheat	.54	.58	.55	.54	.37
	20	Corn	.58	.58	.78	.54	.43
	30	Oats	.39	.38	.38	.40	.21
	40	Barley and rye	.45	.39	.39	.46	.66
	162	Flaxseed	.51	.56	.13	.51	.05
	163	Sugar beets	.55	.70	.15	.54	-
01		Bulk Grain and Beets	.53	.53	.61	.53	.36
	41	Rice	.58	.25	.31	.64	.07
	42	Grain, N.O.S.	.32	.27	.46	.37	.31
	50	Flour, wheat	.19	.25	.21	.17	.21
	51	Meal, corn	.14	.18	.14	.11	.27
	52	Flour and meal	.17	.20	.16	.13	.17
	60	Cereal food preparations	.19	.21	.13	.16	.41
	61	Mill products, N.O.S.	.18	.21	.18	.16	.20
02		Other Cereals	.19	.22	.19	.18	.20
	70	Hay and alfalfa	.22	.25	.26	.21	.27
	71	Straw	.30	.44	.26	.25	.55
	80	Tobacco, leaf	.31	.22	.33	.41	.28
	90	Cotton in bales	.27	.59	.33	.25	-
	91	Cotton linters, noils	.33	.27	.33	.36	.46
03		Cotton, Hay and Tobacco	.26	.24	.33	.24	.28
	110	Oranges and grapefruit	.29	.37	.28	.29	.09
	111	Lemons, limes, and citrus	.25	.78	.46	.25	-
	120	Apples, fresh	.29	.25	.31	.30	.33
	121	Bananas	.25	.34	.21	.32	.33
	122	Berries, fresh	.43	.51	.52	.38	-
	123	Cantaloupes and melons	.20	.27	.30	.19	-
	124	Grapes, fresh	.28	.42	.08	.26	-
	125	Peaches, fresh	.34	.32	.59	.34	.23
	126	Watermelons	.22	.33	.20	.22	.27
	127	Fruits, fresh, domestic	.32	.29	.30	.33	.26
	128	Fruits, fresh, tropical	.27	.28	.45	.23	-
	130	Potatoes, other than sweet	.28	.42	.41	.22	.36
	140	Cabbage	.23	.22	.27	.21	.26
	141	Onions	.20	.21	.18	.19	.25
	142	Tomatoes	.25	.29	.25	.21	.25
	143	Vegetables, fresh, N.O.S.	.21	.22	.23	.19	.27
04		Perishables	.26	.31	.23	.25	.32
	150	Beans and peas, dried	.41	.43	.78	.39	.32
	151	Fruits, dried or evaporated	.49	.34	.37	.53	.36
	152	Vegetables, dry, N.O.S.	.21	.19	.25	.26	.21
	161	Peanuts	.50	.34	.49	.53	.52
	164	Products of Agriculture	.35	.32	.30	.39	.33
	282	Animal products, N.O.S.	.44	.45	.35	.44	.53
	640	Fertilizers, N.O.S.	.42	.46	.41	.38	.33
05		Miscellaneous Farm Products	.39	.39	.39	.41	.33
	170	Horses, mules, ponies	.24	.42	.27	.22	.72
	180	Cattle and calves,single-deck	.21	.19	.29	.21	.25
	181	Calves, double-deck	.19	.16	.46	.25	-
	190	Sheep and goats,single-deck	.16	.19	.26	.15	.21
	191	Sheep and goats,double-deck	.17	.16	.34	.18	.19
	200	Hogs, single-deck	.22	.21	.24	.22	.19
	201	Hogs, double-deck	.21	.18	.30	.23	.31
	230	Poultry, live	.24	.19	.49	.40	-
	260	Wool	.47	.43	.32	.49	-
	270	Hides, green	.38	.38	.44	.38	.31
	281	Animals, live, N.O.S.	.46	.45	.30	.58	-
06		Live Animals	.21	.20	.28	.22	.25
	210	Fresh meats, N.O.S.	.23	.22	.25	.24	.30
	220	Meats, cured, dried	.21	.16	.23	.32	.24
	221	Butterine and margarine	.24	.21	.26	.35	.40
	222	Packing-house products	.29	.27	.27	.35	.31
	231	Poultry, dressed	.36	.25	.62	.45	.18
	240	Eggs	.33	.25	.51	.37	.24
	250	Butter	.40	.29	.55	.45	.29
	251	Cheese	.36	.31	.67	.38	.17
07		Animal Products, Edible	.27	.23	.27	.32	.28
	290	Anthracite coal	.63	.63	.33	.35	.41
	300	Bituminous coal	.40	.46	.40	.40	.34
	310	Coke	.50	.51	.32	.46	.32
08		Coal and Coke	.44	.53	.40	.40	.34
	320	Iron ore	.58	.56	1.65	.56	.38
	330	Copper ore, concentrates	.54	.72	.47	.55	-
	331	Lead ore and concentrates	.68	-	-	.68	-
	332	Zinc ore and concentrates	.32	.22	.05	.33	.02
	333	Ores and concentrates	.36	.40	.31	.36	.42
	392	Products of mines, N.O.S.	.51	.54	.54	.44	.59
09		Ores	.50	.53	.54	.47	.56
	350	Gravel, sand, etc.	.72	.76	.61	.73	.72
	351	Stone, broken, ground, etc.	.62	.76	.63	.48	.68
	352	Stone, rough, N.O.S.	.72	.98	.55	.53	.73
	353	Stone, finished, N.O.S.	.55	.59	.51	.55	.34
10		Sand, Stone and Gravel	.68	.77	.62	.64	.71
	390	Phosphate rock, crude, etc.	.49	3.17	.49	.86	.53
	391	Sulphur (brimstone)	.54	.57	.65	.53	.59
	661	Sulphuric acid	.94	1.50	.52	.98	.91
11		Sulphur and Sulphuric Acid	.61	1.14	.50	.63	.82
	360	Petroleum, crude	.41	.44	.47	.40	1.89
	370	Asphalt (natural) etc.	.61	.64	.90	.56	.78
	450	Petroleum oils, refined	.65	.71	.81	.57	.72
	451	Fuel, road, residual oil	.69	1.01	.77	.54	.67
	452	Lubricating oils and grease	.34	.37	.36	.31	.37
	453	Petroleum products, N.O.S.	.35	.35	.56	.29	.80
12		Petroleum and Products	.61	.68	.76	.53	.71
			$	$	$	$	$
	400	Logs	.37	.35	.33	.39	.28
	401	Posts, poles, and piling	.33	.67	.34	.28	.78
	402	Wood (fuel)	.32	.46	.28	.32	.47
	410	Ties, railroad	.48	.51	.43	.47	1.23
	420	Pulpwood	.31	.38	.27	.29	.24
	430	Lumber, shingles, and lath	.32	.43	.34	.29	.43
	431	Box, crate, and cooperage	.26	.35	.24	.27	.35
	432	Veneer and built-up wood	.24	.26	.28	.23	.34
	442	Crude rubber (unreclaimed)	.53	.53	.20	.54	-
	443	Products of forests, N.O.S.	.27	.30	.29	.22	.33
13		Forest Products	.32	.43	.32	.30	.39
	100	Cottonseed	.61	.40	.63	.60	.43
	101	Cottonseed meal and cake	.40	.41	.41	.39	.08
	160	Vegetable - oil cake, etc.	.24	.30	.12	.20	.37
	460	Cottonseed oil	.55	.27	.60	.55	.16
	461	Linseed oil	.41	.50	.33	.33	-
	462	Vegetable oils, N.O.S.	.26	.29	.26	.21	.19
	280	Fish or sea-animal oil	.39	.26	.35	.63	-
14		Oils - Vegetable and Animal	.46	.32	.52	.47	.24
	490	Iron, pig	.67	.82	.45	.46	.95
	491	Iron and steel, 6th Class	.75	.88	.49	.52	.27
	500	Rails, fastenings, etc.	.51	.42	.78	.63	.82
	510	Cast-iron pipe and fittings	.40	.43	.37	.40	.44
	511	Iron and steel pipe,fittings	.49	.46	.27	.66	.73
	512	Iron and steel: Nails, wire	.43	.40	.34	.58	.64
	513	Iron and steel, 5th Class	.53	.53	.41	.57	.49
	583	Railway car wheels, axles	.60	.47	.79	.83	.83
	692	Furnace slag	.77	.89	.36	.80	.98
	693	Scrap iron and scrap steel	.80	.86	.50	.66	.78
15		Iron and Steel	.56	.57	.42	.59	.62
	520	Copper: Ingot, matte, pig	.63	.72	1.47	.61	.07
	521	Copper, brass, and bronze	.43	.34	.90	.54	.03
	522	Lead & zinc: Ingot, bar	.38	.37	.31	.40	.45
	523	Aluminum: Ingot, pig, slab	.58	.48	1.23	.69	-
16		All Other Metals	.42	.38	.40	.46	.33
	530	Machinery and boilers	.38	.34	.68	.45	.47
	580	Agricultural implements, etc.	.31	.26	.39	.34	.21
	581	Vehicles, horse-drawn, etc.	.15	.09	.44	.39	.43
	582	Tractors and parts	.38	.30	.51	.38	.26
	590	Automobiles (passenger)	.24	.21	.38	.28	.29
	591	Autotrucks	.25	.21	.52	.37	.72
	592	Automobiles, K.D. and parts	.30	.30	.47	.32	.60
	593	Automobile tires	.29	.28	.54	.30	-
	610	Furniture, metal	.26	.25	.37	.28	.38
	611	Furniture, not metal	.23	.20	.31	.24	.24
	697	Building woodwork (millwork)	.27	.33	.52	.24	.40
17		Appliances	.28	.28	.41	.31	.29
	540	Cement, building	.67	.82	.55	.63	.68
	550	Brick, common	.52	.56	.54	.46	.63
	551	Brick, and building tile	.46	.45	.39	.47	.51
	552	Artificial stone, N.O.S.	.40	.38	.68	.41	.61
	560	Lime, common (quick,slaked)	.30	.26	.39	.34	.41
	561	Plaster (stucco or wall) etc.	.33	.43	.31	.27	.29
18		Building Material	.56	.56	.51	.56	.54
	380	Salt	.36	.34	.61	.38	.26
	470	Sugar (beet or cane)	.48	.40	.39	.57	.42
	471	Table sirups and molasses	.33	.30	.31	.36	.27
	472	Molasses, blackstrap, etc.	.70	.92	.45	.70	.59
	620	Beverages	.38	.38	.67	.36	.32
	630	Ice	.63	.61	.72	.63	1.78
	680	Canned food products	.41	.35	.40	.47	.39
19		Manufactured Food	.44	.38	.41	.49	.40
	650	Newsprint paper	.40	.38	.51	.39	.56
	651	Printing paper, N.O.S.	.34	.34	.42	.39	.31
	694	Paper bags, wrapping paper	.35	.35	.38	.36	.28
	695	Paperboard, wallboard	.31	.34	.23	.33	.31
	696	Building paper and roofing	.36	.39	.27	.36	.34
20		Paper and Products	.34	.35	.28	.36	.32
	440	Rosin	.34	.54	.31	.47	-
	441	Turpentine	.34	.52	.29	.38	.46
	660	Alcohol, denatured or wood	.33	.34	.21	.32	.40
	662	Explosives, N.O.S.	.68	.67	.77	.66	1.83
	691	Paints oil and varnishes	.29	.24	.46	.38	.31
21		Chemicals	.36	.32	.34	.45	.42
	271	Leather	.36	.33	.43	.52	.33
	670	Cotton cloth and fabrics	.33	.35	.32	.34	.51
	671	Bagging and bags	.31	.32	.29	.32	.77
22		Textiles and Leather	.33	.33	.33	.32	.46
	570	Sewer pipe and draintile	.27	.24	.34	.31	.30
	699	Glass, flat, not plate	.47	.41	.36	.56	.64
	700	Glass, bottles, jars, etc.	.26	.26	.49	.29	.36
23		Glass and Tile	.28	.26	.35	.31	.46
	690	Tobacco, manufactured	.51	.51	.54	.31	.57
	698	Soap and washing compounds	.34	.34	.33	.35	.34
	701	Manufactures miscellaneous	.35	.35	.34	.35	.39
24		Miscellaneous	.35	.35	.35	.35	.40

Analysis 45.9 Average Load of Railway Interline Traffic Originated or Terminated, in Tons - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
		ALL COMMODITIES	28	28	28	24	49
	10	Wheat	43	42	42	44	39
	20	Corn	46	60	36	38	35
	30	Oats	31	32	24	31	29
	40	Barley and rye	38	33	29	40	31
	162	Flaxseed	39	43	26	39	19
	163	Sugar beets	37	37	21	37	-
01		Bulk Grain and Beets	42	45	37	41	37
	41	Rice	23	23	21	23	23
	42	Grain, N.O.S.	26	24	23	29	29
	50	Flour, wheat	24	26	18	25	22
	51	Meal, corn	21	23	17	24	19
	52	Flour and meal, edible	23	24	16	27	17
	60	Cereal food preparations	18	16	21	19	19
	61	Mill products, N.O.S.	22	22	18	23	21
02		Other Cereals	23	24	18	24	21
	70	Hay and alfalfa	12	12	12	13	12
	71	Straw	12	12	13	14	12
	80	Tobacco, leaf	10	12	10	14	10
	90	Cotton in bales	14	15	16	13	14
	91	Cotton linters, noils, etc.	19	19	19	21	19
03		Cotton, Hay and Tobacco	13	12	14	13	11
	110	Oranges and grapefruit	17	17	17	17	17
	111	Lemons, limes, and citrus	15	15	15	14	15
	120	Apples, fresh	17	16	16	17	13
	121	Bananas	10	10	10	10	10
	122	Berries, fresh	13	12	11	15	8
	123	Cantaloupes and melons	11	11	11	11	12
	124	Grapes, fresh	13	12	13	14	13
	125	Peaches, fresh	12	11	11	13	11
	126	Watermelons	13	13	13	12	15
	127	Fruits, fresh, domestic	13	13	13	14	14
	128	Fruits, fresh, tropical	12	14	12	13	12
	130	Potatoes, other than sweet	17	18	18	17	16
	140	Cabbage	13	12	12	13	13
	141	Onions	13	12	13	14	12
	142	Tomatoes	10	10	10	10	13
	143	Vegetables, fresh, N.O.S.	11	11	11	11	12
04		Perishables	14	14	13	15	14
	150	Beans and peas, dried	28	24	27	30	27
	151	Fruits, dried or evaporated	32	24	33	34	19
	152	Vegetables, dry, N.O.S.	14	13	14	14	12
	161	Peanuts	15	15	14	16	15
	164	Products of agriculture	21	21	21	20	20
	282	Animal products, N.O.S.	19	18	15	20	19
	640	Fertilizers, N.O.S.	28	27	27	31	26
05		Miscellaneous Farm Products	23	21	23	25	21
	170	Horses, mules, ponies	12	11	12	12	11
	180	Cattle and calves, single-deck	11	11	11	11	11
	181	Calves, double-deck	12	12	11	11	16
	190	Sheep, goats, single-deck	7	8	8	7	7
	191	Sheep, goats, double-deck	10	9	11	10	9
	200	Hogs, single-deck	9	10	8	8	7
	201	Hogs, double-deck	12	12	13	12	12
	230	Poultry, live	9	9	10	9	12
	260	Wool	14	13	9	16	16
	270	Hides, green	22	21	23	23	25
	281	Animals, live, N.O.S.	16	15	23	16	-
06		Live Animals	11	12	12	11	11
	210	Fresh meats, N.O.S.	12	12	13	12	13
	220	Meats, cured, dried	15	15	14	16	15
	221	Butterine and margarine	13	12	12	14	23
	222	Packing-house products	17	18	16	17	16
	231	Poultry, dressed	11	11	12	11	12
	240	Eggs	12	12	9	12	10
	250	Butter	12	12	11	12	12
	251	Cheese	14	14	13	15	13
07		Animal Products, Edible	13	12	13	13	14
	290	Anthracite coal	46	46	36	29	49
	300	Bituminous coal	52	53	50	43	57
	310	Coke	30	30	31	31	30
08		Coal and Coke	51	51	50	42	57
	320	Iron ore	63	63	57	61	72
	330	Copper ore concentrates	49	32	47	57	-
	331	Lead ore and concentrates	50	46	61	51	45
	332	Zinc ore and concentrates	49	47	48	50	56
	333	Ores and concentrates	48	47	50	46	54
	392	Products of mines, N.O.S.	41	43	36	41	44
09		Ores	46	47	37	47	50
	350	Gravel and sand	52	52	51	53	55
	351	Stone, broken, ground, etc.	51	50	52	51	50
	352	Stone, rough, N.O.S.	37	36	37	40	29
	353	Stone, finished, N.O.S.	30	31	23	31	27
10		Sand, Stone, and Gravel	46	42	47	49	47
	390	Phosphate rock, crude, etc.	41	37	38	61	50
	391	Sulphur (brimstone)	43	37	38	44	49
	661	Sulphuric acid	47	43	50	45	54
11		Sulphur and Sulphuric Acid	43	40	42	46	51
	360	Petroleum, crude	33	32	31	33	38
	370	Asphalt (natural, by-products)	33	33	33	35	35
	450	Petroleum oils, refined	27	27	27	26	26
	451	Fuel, road, and residual oils	32	29	31	32	31
	452	Lubricating oils, etc.	21	21	21	21	19
	453	Petroleum products	23	24	25	22	26
12		Petroleum and Products	27	27	27	27	27

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
	400	Logs	29	29	26	30	27
	401	Posts, poles, and piling	26	30	28	24	35
	402	Wood (fuel)	28	22	32	28	25
	410	Ties, railroad	33	30	30	37	31
	420	Pulpwood	31	28	30	34	31
	430	Lumber, shingles, and lath	24	24	24	25	26
	431	Box, crate, and cooperage	22	22	21	23	23
	432	Veneer and built-up wood	24	22	22	25	23
	442	Crude rubber (unreclaimed)	37	37	29	31	44
	443	Products of forests, N.O.S.	17	16	20	18	18
13		Forest Products	25	24	24	25	26
	100	Cottonseed	26	30	24	28	20
	101	Cottonseed meal and cake	24	29	22	24	23
	160	Vegetable - oil cake, etc.	25	26	21	21	36
	460	Cottonseed oil	29	26	30	29	30
	461	Linseed oil	25	25	27	26	23
	462	Vegetable oils, N.O.S.	29	29	30	29	26
	280	Fish or sea-animal oil	29	28	28	30	33
14		Oils - Vegetable and Animal	27	27	26	27	28
	490	Iron, pig	51	49	55	54	51
	491	Iron and steel, 6th class	46	46	47	49	32
	500	Rails, fastenings, etc.	21	28	33	39	38
	510	Cast-iron pipe and fittings	23	21	24	27	21
	511	Iron and steel pipe, fittings	28	26	24	32	23
	512	Iron and steel: Nails, wire	24	23	23	28	24
	513	Iron and steel, 5th class	27	26	25	33	27
	583	Railway car wheels, axles	26	21	32	37	27
	692	Furnace slag	52	49	54	49	72
	693	Scrap iron and scrap steel	39	38	39	42	38
15		Iron and Steel	29	28	31	33	28
	520	Copper: Ingot, matte, pig	41	34	53	45	31
	521	Copper, brass and bronze, bar	26	22	15	41	15
	522	Lead and zinc: Ingot, bar	44	39	39	46	46
	523	Aluminum: Ingot, pig, slab	26	26	28	28	6
16		All Other Metals	42	35	39	46	44
	530	Machinery and boilers	16	15	17	17	15
	580	Agricultural Implements, etc.	15	15	17	15	15
	581	Vehicles, horse-drawn, etc.	13	12	14	13	17
	582	Tractors and parts	16	15	14	17	12
	590	Automobiles (passenger)	5	5	5	6	5
	591	Autotrucks	8	8	9	8	6
	592	Automobiles, K.D. and parts	17	16	18	19	15
	593	Automobile tires	14	14	11	15	13
	610	Furniture, metal	11	10	11	13	10
	611	Furniture, not metal	7	7	7	8	7
	697	Building woodwork	20	17	18	22	18
17		Appliances	11	11	10	12	8
	540	Cement, building	38	38	39	39	35
	550	Brick, common	35	36	33	35	37
	551	Brick, and building tile	34	35	29	35	36
	552	Artificial stone, N.O.S.	21	19	28	24	35
	560	Lime, common, quick, slaked	23	23	24	23	21
	561	Plaster, stucco, etc.	26	24	28	28	23
18		Building Material	33	33	34	34	32
	380	Salt	27	28	26	27	26
	470	Sugar (beet or cane)	31	29	24	33	24
	471	Table sirups and molasses	30	29	29	31	24
	472	Molasses, blackstrap, etc.	44	40	44	46	42
	620	Beverages	18	17	21	19	17
	630	Ice	28	30	28	24	24
	680	Canned food products	24	22	21	28	17
19		Manufactured Food	27	25	25	30	21
	650	Newsprint paper	26	26	25	27	26
	651	Printing paper, N.O.S.	23	22	22	4	23
	694	Paper bags, wrapping paper	22	21	22	23	23
	695	Paperboard, wallboard	21	21	21	23	20
	696	Building paper, roofing	22	22	23	23	22
20		Paper and Products	23	23	22	24	22
	440	Rosin	23	25	22	26	24
	441	Turpentine	23	20	24	25	30
	660	Alcohol, denatured or wood	21	20	21	23	22
	662	Explosives, N.O.S.	15	16	13	16	13
	691	Paints in oil and varnishes	22	20	24	25	19
21		Chemicals	21	17	22	21	19
	271	Leather	17	17	17	16	16
	670	Cotton cloth and fabrics	10	10	9	13	11
	671	Bagging and bags	18	15	17	19	17
22		Textiles and Leather	13	13	10	17	14
	570	Sewer pipe and draintile	19	20	17	19	16
	699	Glass, flat, not plate	31	25	26	31	62
	700	Glass: Bottles, jars, etc.	17	17	17	17	17
23		Glass and Tile	19	18	17	19	22
	690	Tobacco, manufactured	18	18	18	19	17
	698	Soap and washing compounds	20	20	20	21	20
	701	Manufactures, miscellaneous	20	20	20	20	23
24		Miscellaneous	20	20	20	20	22

Analysis 45.10 Average Haul of Railway Interline Traffic Originated or Terminated, in Miles - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
		ALL COMMODITIES	200	158	205	261	269
	10	Wheat	262	207	259	284	339
	20	Corn	253	249	189	275	166
	30	Oats	192	214	201	155	239
	40	Barley and rye	183	203	238	174	382
	162	Flaxseed	198	161	319	200	345
	163	Sugar beets	28	32	272	27	-
01		Bulk Grain and Beets	234	220	230	242	281
	41	Rice	259	282	279	251	231
	42	Grain, N.O.S.	279	239	411	360	439
	50	Flour, wheat	284	287	196	304	304
	51	Meal, corn	235	201	234	271	193
	52	Flour and meal, edible	240	220	252	338	403
	60	Cereal food preparations	298	227	298	439	379
	61	Mill products, N.O.S.	232	210	236	254	295
02		Other Cereals	265	249	216	293	312
	70	Hay and alfalfa	211	199	239	217	280
	71	Straw	131	128	197	124	190
	80	Tobacco, leaf	206	217	187	229	249
	90	Cotton in bales	228	160	269	212	245
	91	Cotton linters, noils, etc.	267	226	289	288	256
03		Cotton, Hay and Tobacco	220	194	246	215	255
	110	Oranges and grapefruit	700	389	546	1,075	401
	111	Lemons, limes, and citrus	750	609	335	857	452
	120	Apples, fresh	582	318	303	877	167
	121	Bananas	365	217	550	296	277
	122	Berries, fresh	426	314	392	580	231
	123	Cantaloupes and melons	655	589	424	726	312
	124	Grapes, fresh	749	468	393	1,007	444
	125	Peaches, fresh	418	411	193	476	324
	126	Watermelons	292	210	321	348	188
	127	Fruits, fresh, domestic	656	554	345	739	310
	128	Fruits, fresh, tropical	493	328	547	685	279
	130	Potatoes, other than sweet	309	184	256	480	269
	140	Cabbage	361	279	478	430	164
	141	Onions	369	323	395	433	388
	142	Tomatoes	559	477	654	583	412
	143	Vegetables, fresh, N.O.S.	581	476	452	710	434
04		Perishables	513	337	437	721	278
	150	Beans and peas, dried	452	236	304	746	400
	151	Fruits, dried or evaporated	582	313	401	661	399
	152	Vegetables, dry, N.O.S.	281	271	261	316	420
	161	Peanuts	256	214	210	344	373
	164	Products of agriculture	313	260	269	394	445
	282	Animal products, N.O.S.	302	231	289	458	232
	640	Fertilizers, N.O.S.	169	157	156	224	177
05		Miscellaneous Farm Products	270	211	191	431	273
	170	Horses, mules, ponies	330	320	218	358	136
	180	Cattle and calves, single-deck	284	315	172	277	245
	181	Calves, double-deck	348	376	216	311	89
	190	Sheep, goats, single-deck	297	265	141	342	325
	191	Sheep, goats, double-deck	394	361	153	415	205
	200	Hogs, single-deck	232	263	189	231	157
	201	Hogs, double-deck	368	412	247	319	126
	230	Poultry, live	505	636	264	349	437
	260	Wool	378	216	205	681	575
	270	Hides, green	301	259	373	361	305
	281	Animals, live, N.O.S.	193	154	512	523	-
06		Live Animals	324	342	216	323	250
	210	Fresh meats, N.O.S.	398	434	364	357	369
	220	Meats, cured, dried, etc.	426	405	330	509	439
	221	Butterine and margarine	339	308	369	382	382
	222	Packing-house products	375	409	314	358	444
	231	Poultry, dressed	442	486	258	403	386
	240	Eggs	484	461	284	542	512
	250	Butter	394	416	297	370	484
	251	Cheese	298	351	273	242	560
07		Animal Products, Edible	404	430	334	388	418
	290	Anthracite coal	112	112	168	172	84
	300	Bituminous coal	176	139	195	165	276
	310	Coke	134	104	232	190	148
08		Coal and Coke	166	132	195	166	275
	320	Iron ore	90	90	64	84	212
	330	Copper ore concentrates	30	150	49	24	-
	331	Lead ore and concentrates	34	26	429	31	403
	332	Zinc ore and concentrates	154	85	168	388	327
	333	Ores and concentrates	236	235	206	233	386
	392	Products of mines, N.O.S.	145	127	215	167	155
09		Ores	127	113	202	133	191
	350	Gravel and sand	54	72	52	46	125
	351	Stone, broken, ground, etc.	61	55	62	66	69
	352	Stone, rough, N.O.S.	124	130	132	105	152
	353	Stone, finished, N.O.S.	226	245	174	187	294
10		Sand, Stone and Gravel	67	96	63	56	113
	390	Phosphate rock, crude, etc.	205	130	196	347	222
	391	Sulphur (brimstone)	228	182	151	245	243
	661	Sulphuric acid	110	79	167	91	107
11		Sulphur and Sulphuric Acid	175	109	183	223	154
	360	Petroleum, crude	284	151	311	312	105
	370	Asphalt (natural, by-products)	169	136	244	199	186
	450	Petroleum oils, refined	190	114	165	248	136
	451	Fuel, road, and residual oils	184	85	157	245	124
	452	Lubricating oils, etc.	236	176	267	313	286
	453	Petroleum products	226	180	378	301	165
12		Petroleum and Products	194	119	176	252	148

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EAST-ERN	SOUTH-ERN	WEST-ERN	POCA-HONTAS
	400	Logs	50	103	77	42	127
	401	Posts, poles, and piling	256	173	270	300	283
	402	Wood (fuel)	77	66	60	84	236
	410	Ties, railroad	198	187	163	230	158
	420	Pulpwood	114	123	95	120	95
	430	Lumber, shingles, and lath	322	208	243	471	246
	431	Box, crate, and cooperage	293	236	257	349	257
	432	Veneer and built-up wood	627	317	267	1,053	359
	442	Crude rubber (unreclaimed)	284	282	162	398	633
	443	Products of forests, N.O.S.	204	192	180	270	138
13		Forest Products	277	202	229	367	199
	100	Cottonseed	81	227	66	94	252
	101	Cottonseed meal and cake	244	356	323	222	254
	160	Vegetable - oil cake, etc.	233	233	208	205	569
	460	Cottonseed oil	270	251	269	285	376
	461	Linseed oil	263	147	524	450	281
	462	Vegetable oils, N.O.S.	499	271	464	707	231
	280	Fish or sea-animal oil	440	227	138	1,283	535
14		Oils - Vegetable and Animal	264	268	216	295	351
	490	Iron, pig	141	112	214	172	152
	491	Iron and steel, 6th class	87	104	26	41	190
	500	Rails, fastenings, etc.	154	138	244	159	185
	510	Cast-iron pipe and fittings	239	176	270	333	283
	511	Iron and steel pipe, fittings	228	217	243	242	205
	512	Iron and steel: Nails, wire	204	172	206	290	211
	513	Iron and steel, 5th class	176	161	202	218	232
	583	Railway car wheels, axles	178	158	188	231	167
	692	Furnace slag	87	41	152	160	35
	693	Scrap iron and scrap steel	114	110	147	122	150
15		Iron and Steel	166	148	195	215	206
	520	Copper: Ingot, matte, pig	326	179	346	489	375
	521	Copper, brass and bronze	186	186	181	187	180
	522	Lead and zinc: Ingot, bar	412	252	151	585	386
	523	Aluminum: Ingot, pig, slab	246	261	213	158	400
16		All Other Metals	364	224	174	528	380
	530	Machinery and boilers	252	225	267	322	230
	580	Agricultural implements, etc.	294	271	253	328	288
	581	Vehicles, horse-drawn, etc.	268	283	268	253	287
	582	Tractors and parts	329	250	242	415	244
	590	Automobiles (passenger)	312	246	238	514	403
	591	Autotrucks	382	301	250	653	331
	592	Automobiles, K.D. and parts	255	197	248	529	463
	593	Automobile tires	328	254	290	550	390
	610	Furniture, metal	273	236	268	338	293
	611	Furniture, not metal	295	244	299	376	339
	697	Building woodwork	581	379	290	776	300
17		Appliances	289	227	264	468	337
	540	Cement, building	99	85	139	106	116
	550	Brick, common	110	113	104	120	75
	551	Brick and building tile	176	179	158	173	177
	552	Artificial stone, N.O.S.	169	170	171	170	123
	560	Lime, common, quick, slaked	174	192	169	146	150
	561	Plaster, stucco, etc.	227	168	220	309	178
18		Building Material	121	113	141	126	136
	380	Salt	212	196	262	220	207
	470	Sugar (beet or cane)	350	254	241	419	376
	471	Table sirups and molasses	368	318	403	402	480
	472	Molasses, blackstrap, etc.	239	196	412	225	518
	620	Beverages	275	251	343	298	416
	630	Ice	47	43	50	60	195
	680	Canned food products	327	269	267	431	326
19		Manufactured Food	289	235	267	347	306
	650	Newsprint paper	225	178	254	418	233
	651	Printing paper, N.O.S.	211	188	259	314	234
	694	Paper bags, wrapping paper	239	191	233	336	248
	695	Paperboard, wallboard	203	170	263	264	207
	696	Building paper and roofing	192	161	232	242	252
20		Paper and Products	215	178	249	326	229
	440	Rosin	231	151	266	278	368
	441	Turpentine	353	207	415	504	345
	660	Alcohol, denatured or wood	237	203	230	349	311
	662	Explosives, N.O.S.	198	148	188	274	261
	691	Paints in oil and varnishes	256	210	271	392	265
21		Chemicals	240	187	280	332	295
	271	Leather	242	238	398	130	283
	670	Cotton cloth and fabrics	233	156	281	353	278
	671	Bagging and bags	309	582	304	318	457
22		Textiles and Leather	254	204	290	308	319
	570	Sewer pipe and draintile	175	196	154	129	159
	699	Glass, flat, not plate	295	244	207	360	375
	700	Glass: Bottles, jars, etc.	255	211	226	324	267
23		Glass and Tile	224	210	192	262	277
	690	Tobacco, manufactured	447	249	331	865	443
	698	Soap and washing compounds	246	196	281	346	327
	701	Manufactures, miscellaneous	238	210	236	337	245
24		Miscellaneous	240	209	241	343	251

Analysis 45.11 Average Revenue of Railway Interline Traffic Originated or Terminated, per Ton Mile - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EASTERN	SOUTHERN	WESTERN	POCAHONTAS
			$	$	$	$	$
		ALL COMMODITIES	.0102	.0108	.0110	.0111	.0060
	10	Wheat	.0080	.0082	.0102	.0075	.0073
	20	Corn	.0078	.0068	.0110	.0081	.0100
	30	Oats	.0090	.0082	.0102	.0105	.0075
	40	Barley and rye	.0092	.0101	.0106	.0089	.0069
	162	Flaxseed	.0100	.0130	.0082	.0099	.0152
	163	Sugar beets	.0163	.0184	.0128	.0158	-
01		Bulk Grain and Beets	.0081	.0077	.0104	.0080	.0078
	41	Rice	.0122	.0112	.0103	.0129	.0128
	42	Grain, N.O.S.	.0090	.0087	.0070	.0098	.0064
	50	Flour, wheat	.0067	.0074	.0119	.0053	.0086
	51	Meal, corn	.0060	.0065	.0066	.0050	.0105
	52	Flour and meal, edible	.0076	.0075	.0099	.0066	.0061
	60	Cereal food preparations	.0101	.0114	.0103	.0088	.0072
	61	Mill products, N.O.S.	.0068	.0079	.0087	.0051	.0070
02		Other Cereals	.0071	.0079	.0105	.0057	.0080
	70	Hay and alfalfa	.0139	.0146	.0134	.0130	.0135
	71	Straw	.0172	.0184	.0135	.0134	.0144
	80	Tobacco, leaf	.0206	.0211	.0227	.0227	.0151
	90	Cotton in bales	.0179	.0183	.0138	.0206	.0125
	91	Cotton linters, noils	.0117	.0117	.0119	.0120	.0092
03		Cotton, Hay and Tobacco	.0165	.0155	.0153	.0181	.0142
	110	Oranges and grapefruit	.0138	.0117	.0190	.0128	.0190
	111	Lemons, limes, and citrus	.0118	.0101	.0112	.0124	.0226
	120	Apples, fresh	.0128	.0120	.0134	.0129	.0182
	121	Bananas	.0208	.0245	.0174	.0257	.0273
	122	Berries, fresh	.0247	.0225	.0411	.0179	.0420
	123	Cantaloupes and melons	.0143	.0114	.0134	.0162	.0249
	124	Grapes, fresh	.0132	.0128	.0149	.0132	.0265
	125	Peaches, fresh	.0180	.0144	.0304	.0183	.0194
	126	Watermelons	.0150	.0162	.0141	.0157	.0164
	127	Fruits, fresh, domestic	.0136	.0111	.0162	.0148	.0167
	128	Fruits, fresh, tropical	.0121	.0144	.0107	.0125	.0149
	130	Potatoes, other than sweet	.0128	.0162	.0158	.0107	.0144
	140	Cabbage	.0154	.0145	.0175	.0151	.0234
	141	Onions	.0130	.0128	.0136	.0132	.0131
	142	Tomatoes	.0151	.0128	.0173	.0150	.0181
	143	Vegetables, fresh, N.O.S.	.0152	.0129	.0235	.0150	.0204
04		Perishables	.0140	.0133	.0184	.0133	.0181
	150	Beans and peas, dried	.0104	.0118	.0165	.0094	.0120
	151	Fruits, dried or evaporated	.0113	.0131	.0098	.0111	.0012
	152	Vegetables, dry, N.O.S.	.0151	.0137	.0215	.0149	.0136
	161	Peanuts	.0162	.0173	.0181	.0142	.0136
	164	Products of Agriculture	.0116	.0114	.0116	.0120	.0085
	282	Animal products, N.O.S.	.0158	.0168	.0185	.0145	.0161
	640	Fertilizers, N.O.S.	.0106	.0113	.0110	.0090	.0088
05		Miscellaneous Farm Products	.0119	.0125	.0126	.0113	.0103
	170	Horses, mules, ponies	.0200	.0294	.0247	.0168	.0478
	180	Cattle and calves, single-deck	.0146	.0135	.0204	.0149	.0158
	181	Calves, double-deck	.0130	.0126	.0160	.0138	.0328
	190	Sheep and goats, single-deck	.0147	.0150	.0239	.0140	.0146
	191	Sheep and goats, double-deck	.0133	.0125	.0182	.0135	.0180
	200	Hogs, single-deck	.0163	.0143	.0184	.0168	.0213
	201	Hogs, double-deck	.0126	.0116	.0192	.0142	.0177
	230	Poultry, live	.0223	.0199	.0307	.0281	.0204
	260	Wool	.0225	.0231	.0337	.0224	.0132
	270	Hides, green	.0146	.0151	.0151	.0138	.0130
	281	Animals, live, N.O.S.	.0209	.0207	.0117	.0274	-
06		Live Animals	.0149	.0140	.0202	.0153	.0157
	210	Fresh meats, N.O.S.	.0170	.0173	.0193	.0158	.0204
	220	Meats, cured dried	.0155	.0131	.0182	.0163	.0144
	221	Butterine and margarine	.0241	.0231	.0306	.0193	.0148
	222	Packing-house products	.0145	.0119	.0176	.0166	.0135
	231	Poultry, dressed	.0218	.0213	.0275	.0221	.0288
	240	Eggs	.0192	.0202	.0273	.0175	.0219
	250	Butter	.0216	.0226	.0297	.0195	.0221
	251	Cheese	.0214	.0188	.0269	.0241	.0172
07		Animal Products, Edible	.0176	.0176	.0198	.0172	.0170
	290	Anthracite coal	.0116	.0116	.0073	.0108	.0118
	300	Bituminous coal	.0065	.0072	.0058	.0080	.0052
	310	Coke	.0087	.0115	.0076	.0083	.0092
08		Coal and Coke	.0070	.0081	.0059	.0081	.0052
	320	Iron and ore	.0078	.0076	.0067	.0087	.0047
	330	Copper ore concentrates	.0072	.0071	.0141	.0068	-
	331	Lead ore and concentrates	.0161	.0133	.0046	.0184	.0069
	332	Zinc ore and concentrates	.0066	.0073	.0084	.0061	.0051
	333	Ores and concentrates, N.O.S.	.0070	.0067	.0077	.0075	.0035
	392	Products of mines, N.O.S.	.0082	.0085	.0074	.0078	.0088
09		Ores	.0079	.0081	.0074	.0078	.0069
	350	Gravel, sand etc.	.0100	.0092	.0100	.0107	.0060
	351	Stone, broken, ground, etc.	.0095	.0110	.0088	.0089	.0090
	352	Stone, rough, N.O.S.	.0102	.0116	.0072	.0094	.0102
	353	Stone, finished, N.O.S.	.0106	.0103	.0117	.0116	.0095
10		Sand, Stone and Gravel	.0099	.0103	.0093	.0101	.0073
	390	Phosphate rock, crude, etc.	.0086	.0109	.0092	.0058	.0053
	391	Sulphur (brimstone)	.0087	.0111	.0118	.0079	.0117
	661	Sulphuric acid	.0148	.0200	.0103	.0184	.0127
11		Sulphur and Sulphuric Acid	.0102	.0153	.0097	.0085	.0112
	360	Petroleum, crude	.0069	.0107	.0064	.0065	.0127
	370	Asphalt (natural) etc.	.0116	.0125	.0102	.0114	.0104
	450	Petroleum oils, refined	.0142	.0182	.0177	.0124	.0169
	451	Fuel, road, residual oils	.0112	.0180	.0134	.0096	.0124
	452	Lubricating oils and greases	.0127	.0142	.0129	.0113	.0143
	453	Petroleum products, N.O.S.	.0125	.0138	.0120	.0111	.0160
12		Petroleum and Products	.0133	.0170	.0163	.0116	.0153
	400	Logs	.0105	.0138	.0108	.0099	.0114
	401	Posts, poles, and piling	.0097	.0011	.0095	.0094	.0076
	402	Wood (fuel)	.0100	.0149	.0101	.0092	.0099
	410	Ties, railroad	.0093	.0078	.0122	.0088	.0138
	420	Pulpwood	.0084	.0104	.0075	.0072	.0095
	430	Lumber, shingles, and lath	.0085	.0102	.0089	.0077	.0100
	431	Box, crate, and cooperage	.0112	.0099	.0154	.0097	.0096
	432	Veneer and built-up wood	.0073	.0092	.0108	.0064	.0101
	442	Crude rubber (unreclaimed)	.0128	.0012	.0184	.0141	.0093
	443	Products of forests, N.O.S.	.0124	.0012	.0115	.0118	.0153
13		Forest Products	.0090	.0105	.0098	.0081	.0100
	100	Cottonseed	.0190	.0119	.0212	.0177	.0120
	101	Cottonseed meal and cake	.0087	.0070	.0083	.0098	.0076
	160	Vegetable - oil cake, etc.	.0083	.0090	.0090	.0076	.0037
	460	Cottonseed oil	.0114	.0094	.0118	.0120	.0077
	461	Linseed oil	.0124	.0177	.0088	.0094	.0118
	462	Vegetable oils, N.O.S.	.0066	.0093	.0054	.0059	.0102
	280	Fish or sea-animal oil	.0079	.0099	.0220	.0055	.0086
14		Oils - Vegetable and Animal	.0094	.0090	.0105	.0091	.0066
	490	Iron, pig	.0090	.0108	.0069	.0073	.0084
	491	Iron and steel, 6th Class	.0132	.0132	.0168	.0124	.0131
	500	Rails, fastenings, frogs	.0127	.0137	.0105	.0110	.0131
	510	Cast-iron pipe and fittings	.0127	.0148	.0109	.0126	.0115
	511	Iron and steel pipe, fittings	.0161	.0137	.0148	.0188	.0148
	512	Iron and steel: Nails, wire	.0151	.0147	.0160	.0156	.0129
	513	Iron and steel, 5th Class	.0143	.0145	.0150	.0139	.0129
	583	Railway car wheels, axles	.0151	.0155	.0155	.0142	.0158
	692	Furnace slag	.0075	.0120	.0056	.0068	.0213
	693	Scrap iron and scrap steel	.0115	.0120	.0090	.0098	.0108
15		Iron and Steel	.0137	.0139	.0107	.0147	.0125
	520	Copper: Ingot, matte, pig	.0084	.0116	.0154	.0070	.0107
	521	Copper, brass, and bronze	.0160	.0176	.0270	.0132	.0218
	522	Lead and zinc: Ingot, Bar	.0175	.0074	.0094	.0057	.0060
	523	Aluminum: Ingot, pig, slab	.0171	.0168	.0166	.0226	.0170
16		All Other Metals	.0074	.0097	.0113	.0063	.0064
	530	Machinery and boilers	.0185	.0154	.0209	.0239	.0163
	580	Agricultural implements, etc.	.0175	.0138	.0181	.0206	.0144
	581	Vehicles, horse-drawn, etc.	.0209	.0163	.0235	.0252	.0121
	582	Tractors and parts	.0171	.0149	.0231	.0176	.0155
	590	Automobiles (passenger)	.0402	.0373	.0545	.0427	.0308
	591	Autotrucks	.0179	.0255	.0446	.0321	.0366
	592	Automobiles, K.D. and parts	.0179	.0178	.0208	.0179	.0136
	593	Automobile tires	.0201	.0184	.0270	.0215	.0153
	610	Furniture, metal	.0215	.0227	.0212	.0195	.0192
	611	Furniture, not metal	.0263	.0258	.0288	.0244	.0289
	697	Building woodwork (millwork)	.0076	.0095	.0121	.0067	.0130
17		Appliances	.0226	.0215	.0274	.0233	.0231
	540	Cement, building	.0135	.0150	.0097	.0134	.0109
	550	Brick, common	.0104	.0110	.0091	.0103	.0131
	551	Brick, and building tile	.0088	.0088	.0091	.0088	.0078
	552	Artificial stone, N.O.S.	.0114	.0107	.0124	.0126	.0125
	560	Lime, common (quick slaked)	.0095	.0088	.0090	.0117	.0094
	561	Plaster (stucco wall) etc.	.0094	.0113	.0102	.0079	.0098
18		Building Material	.0116	.0122	.0096	.0119	.0062
	380	Salt	.0102	.0093	.0097	.0111	.0106
	470	Sugar (beet or cane)	.0109	.0115	.0126	.0106	.0101
	471	Table sirups and molasses	.0092	.0101	.0082	.0089	.0092
	472	Molasses, blackstrap, etc.	.0092	.0114	.0067	.0091	.0067
	620	Beverages	.0141	.0147	.0140	.0137	.0115
	630	Ice	.0189	.0195	.0196	.0169	.0140
	680	Canned food products	.0126	.0129	.0154	.0119	.0120
19		Manufactured Food	.0113	.0116	.0117	.0110	.0107
	650	Newsprint paper	.0112	.0128	.0105	.0082	.0123
	651	Printing paper, N.O.S.	.0124	.0128	.0136	.0112	.0100
	694	Paper bags and wrapping paper	.0126	.0136	.0149	.0115	.0104
	695	Paperboard, wallboard	.0120	.0130	.0103	.0112	.0116
	696	Building paper and roofing	.0135	.0134	.0143	.0133	.0115
20		Paper and Products	.0121	.0130	.0120	.0105	.0111
	440	Rosin	.0101	.0116	.0098	.0089	.0090
	441	Turpentine	.0124	.0121	.0126	.0123	.0106
	660	Alcohol, denatured or wood	.0138	.0150	.0123	.0119	.0124
	662	Explosives, N.O.S.	.0416	.0372	.0540	.0440	.0399
	691	Paints, oil and varnishes	.0144	.0143	.0167	.0140	.0153
21		Chemicals	.0170	.0175	.0128	.0204	.0175
	271	Leather	.0163	.0159	.0174	.0241	.0151
	670	Cotton cloth and fabrics	.0221	.0313	.0213	.0191	.0208
	671	Bagging and bags	.0142	.0134	.0139	.0148	.0110
22		Textiles and Leather	.0184	.0187	.0195	.0161	.0157
	570	Sewer pipe and draintile	.0125	.0118	.0133	.0145	.0139
	699	Glass, flat, not plate	.0128	.0143	.0207	.0120	.0097
	700	Glass: Bottles, jars, etc.	.0141	.0133	.0195	.0154	.0133
23		Glass and Tile	.0135	.0130	.0173	.0146	.0122
	690	Tobacco, manufactured	.0198	.0237	.0239	.0152	.0225
	698	Soap and washing compounds	.0146	.0146	.0136	.0152	.0119
	701	Manufactures miscellaneous	.0139	.0135	.0155	.0146	.0116
24		Miscellaneous	.0140	.0136	.0157	.0146	.0122

Analysis 45.12 Average Revenue of Railway Interline Traffic Originated or Terminated, per Loaded Car Mile - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EASTERN	SOUTHERN	WESTERN	POCAHONTAS
		ALL COMMODITIES	$ .29	$ .31	$ .29	$ .26	$ .29
	10	Wheat	.35	.34	.44	.34	.29
	20	Corn	.35	.41	.39	.31	.35
	30	Oats	.28	.26	.25	.33	.22
	40	Barley and rye	.35	.33	.31	.36	.21
	162	Flaxseed	.39	.57	.21	.39	.28
	163	Sugar beets	.61	.68	.26	.59	-
01		Bulk Grain and Beets	.34	.34	.38	.33	.29
	41	Rice	.28	.26	.22	.30	.29
	42	Grain, N.O.S.	.23	.21	.16	.29	.18
	50	Flour, wheat	.16	.19	.22	.13	.19
	51	Meal, corn	.13	.15	.11	.12	.20
	52	Flour and meal	.17	.18	.16	.18	.10
	60	Cereal food preparations	.18	.19	.22	.17	.14
	61	Mill products, N.O.S.	.15	.17	.15	.12	.15
02		Other Cereals	.16	.19	.19	.14	.17
	70	Hay and alfalfa	.17	.17	.16	.17	.16
	71	Straw	.22	.23	.17	.19	.17
	80	Tobacco, leaf	.22	.26	.24	.32	.16
	90	Cotton in bales	.25	.28	.23	.27	.18
	91	Cotton linters, noils	.23	.22	.23	.25	.18
03		Cotton, Hay and Tobacco	.22	.19	.22	.24	.16
	110	Oranges and grapefruit	.24	.20	.32	.22	.33
	111	Lemons, limes, and citrus	.17	.15	.17	.18	.35
	120	Apples, fresh	.22	.19	.21	.23	.25
	121	Bananas	.22	.26	.18	.28	.28
	122	Berries, fresh	.33	.28	.49	.27	.35
	123	Cantaloupes and melons	.16	.12	.15	.18	.31
	124	Grapes, fresh	.18	.16	.20	.18	.37
	125	Peaches, fresh	.22	.16	.35	.24	.21
	126	Watermelons	.20	.22	.19	.20	.25
	127	Fruits, fresh, domestic	.19	.15	.21	.21	.23
	128	Fruits, fresh, tropical	.15	.20	.13	.16	.18
	130	Potatoes, other than sweet	.23	.30	.28	.18	.24
	140	Cabbage	.20	.18	.22	.20	.31
	141	Onions	.17	.16	.18	.18	.16
	142	Tomatoes	.16	.13	.18	.16	.24
	143	Vegetables, fresh, N.O.S.	.17	.14	.27	.17	.25
04		Perishables	.20	.18	.25	.20	.26
	150	Beans and peas, dried	.30	.29	.46	.28	.32
	151	Fruits, dried or evaporated	.37	.32	.32	.37	.22
	152	Vegetables, dry, N.O.S.	.21	.19	.31	.22	.17
	161	Peanuts	.25	.27	.26	.23	.21
	164	Products of agriculture	.24	.24	.25	.25	.17
	282	Animal products, N.O.S.	.30	.31	.28	.30	.32
	640	Fertilisers, N.O.S.	.30	.30	.30	.28	.23
05		Miscellaneous Farm Products	.28	.27	.29	.28	.22
	170	Horses, mules, ponies	.24	.34	.30	.20	.54
	180	Cattle and calves, single-deck	.16	.16	.23	.16	.18
	181	Calves, double-deck	.16	.16	.18	.16	.52
	190	Sheep and goats, single-deck	.11	.12	.20	.10	.10
	191	Sheep and goats, double-deck	.13	.12	.20	.13	.17
	200	Hogs, single-deck	.15	.14	.16	.14	.17
	201	Hogs, double-deck	.15	.14	.25	.17	.21
	230	Poultry, live	.20	.18	.32	.26	.24
	260	Wool	.33	.30	.33	.36	.22
	270	Hides, green	.33	.33	.35	.32	.33
	281	Animals, live, N.O.S.	.33	.31	.27	.44	-
06		Live Animals	.17	.17	.24	.17	.18
	210	Fresh meats, N.O.S.	.20	.20	.25	.19	.27
	220	Meats, cured, dried	.24	.20	.25	.27	.22
	221	Butterine and margarine	.31	.28	.38	.28	.34
	222	Packing-house products	.25	.22	.29	.28	.22
	231	Poultry, dressed	.25	.24	.33	.25	.36
	240	Eggs	.23	.24	.27	.21	.23
	250	Butter	.26	.28	.35	.24	.27
	251	Cheese	.30	.26	.35	.36	.23
07		Animal Products, Edible	.23	.22	.27	.23	.24
	290	Anthracite coal	.53	.54	.27	.32	.58
	300	Bituminous coal	.34	.38	.29	.34	.30
	310	Coke	.30	.35	.24	.26	.28
08		Coal and Coke	.36	.41	.29	.34	.30
	320	Iron ore	.49	.48	.39	.53	.34
	330	Copper ore concentrates	.36	.22	.68	.39	-
	331	Lead ore and concentrates.	.81	.62	.28	.95	.31
	332	Zinc ore and concentrates	.32	.34	.41	.31	.29
	333	Ores and concentrates	.33	.32	.38	.35	.19
	392	Products of mines, N.O.S.	.34	.37	.26	.32	.39
09		Ores	.36	.38	.28	.37	.35
	350	Gravel, sand, etc.	.52	.48	.51	.57	.33
	351	Stone, broken, ground, etc.	.49	.55	.46	.46	.45
	352	Stone, rough, N.O.S.	.38	.42	.27	.38	.30
	353	Stone, finished, N.O.S.	.32	.32	.27	.36	.26
10		Sand, Stone and Gravel	.46	.43	.43	.50	.34
	390	Phosphate rock, crude, etc.	.36	.41	.35	.35	.26
	391	Sulphur (brimstone)	.37	.41	.45	.35	.57
	661	Sulphuric acid	.70	.87	.52	.83	.70
11		Sulphur and Sulphuric Acid	.44	.62	.40	.39	.58
	360	Petroleum, crude	.23	.34	.20	.22	.49
	370	Asphalt (natural) etc.	.39	.41	.34	.40	.36
	450	Petroleum oils, refined	.38	.49	.48	.33	.45
	451	Fuel, road, residual oils	.36	.53	.42	.31	.39
	452	Lubricating oils and greases	.27	.31	.27	.24	.28
	453	Petroleum products, N.O.S.	.30	.34	.31	.25	.41
12		Petroleum and Products	.36	.46	.45	.32	.42
	400	Logs	.30	.41	.28	.30	.31
	401	Posts, poles, and piling	.26	.34	.26	.23	.27
	402	Wood (fuel)	.28	.33	.32	.26	.25
	410	Ties, railroad	.30	.24	.36	.32	.44
	420	Pulpwood	.26	.29	.22	.25	.29
	430	Lumber, shingles, and lath	.21	.24	.21	.19	.26
	431	Box, crate, and cooperage	.25	.22	.33	.23	.22
	432	Veneer and built-up wood	.18	.20	.24	.16	.23
	442	Crude rubber (unreclaimed)	.47	.47	.54	.43	.41
	443	Products of forests, N.O.S.	.22	.21	.22	.21	.28
13		Forest Products	.22	.25	.23	.20	.27
	100	Cottonseed	.50	.35	.51	.50	.24
	101	Cottonseed meal and cake	.21	.20	.19	.24	.17
	160	Vegetable - oil cake, etc.	.20	.23	.19	.16	.13
	460	Cottonseed oil	.33	.24	.35	.35	.23
	461	Linseed oil	.32	.44	.24	.24	.27
	462	Vegetable oils, N.O.S.	.19	.27	.16	.17	.27
	280	Fish or sea-animal oil	.23	.28	.62	.17	.28
14		Oils - Vegetable and Animal	.25	.25	.27	.24	.19
	490	Iron, pig	.47	.53	.39	.40	.42
	491	Iron and steel, 6th Class	.61	.61	.80	.62	.42
	500	Rails, fastenings, etc.	.40	.39	.35	.43	.50
	510	Cast-iron pipe and fittings	.30	.32	.26	.34	.24
	511	Iron and steel pipe fittings	.46	.36	.35	.62	.34
	512	Iron and steel: Nails, wire	.37	.34	.36	.44	.31
	513	Iron and steel, 5th Class	.39	.38	.38	.47	.36
	583	Railway car wheels, axles	.39	.33	.50	.52	.43
	692	Furnace slag	.39	.59	.30	.34	1.54
	693	Scrap iron and scrap steel	.45	.46	.36	.41	.42
15		Iron and Steel	.40	.39	.34	.49	.36
	520	Copper: Ingot, matte, pig	.35	.39	.82	.31	.33
	521	Copper, brass, and bronze	.43	.39	.40	.55	.34
	522	Lead and zinc: Ingot, Bar	.28	.29	.37	.27	.28
	523	Aluminum: Ingot, pig, slab	.46	.45	.46	.05	.10
16		All Other Metals	.31	.34	.44	.29	.28
	530	Machinery and boilers	.30	.24	.36	.42	.25
	580	Agricultural implements, etc.	.27	.21	.30	.31	.22
	581	Vehicles, horse-drawn, etc.	.27	.20	.33	.33	.20
	582	Tractors and parts	.28	.22	.33	.30	.20
	590	Automobiles (passenger)	.23	.22	.31	.25	.18
	591	Autotrucks	.24	.21	.43	.26	.24
	592	Automobiles, K.D. and parts	.31	.29	.39	.35	.21
	593	Automobile tires	.29	.27	.30	.32	.20
	610	Furniture, metal	.25	.24	.27	.25	.19
	611	Furniture, not metal	.20	.19	.21	.20	.20
	697	Building woodwork (millwork)	.15	.16	.22	.15	.23
17		Appliances	.26	.24	.30	.28	.20
	540	Cement, building	.52	.57	.38	.32	.39
	550	Brick, common	.37	.40	.31	.36	.49
	551	Brick, and building tile	.30	.31	.26	.31	.28
	552	Artificial stone, N.O.S.	.24	.21	.35	.30	.43
	560	Lime, common (quick, slaked)	.22	.20	.22	.27	.20
	561	Plaster (stucco or wall) etc.	.25	.27	.29	.22	.25
18		Building Material	.39	.40	.33	.41	.31
	380	Salt	.28	.26	.26	.30	.27
	470	Sugar (beet or cane)	.34	.34	.31	.35	.24
	471	Table sirups and molasses	.27	.29	.24	.27	.22
	472	Molasses, blackstrap, etc.	.40	.45	.30	.42	.28
	620	Beverages	.26	.26	.30	.26	.20
	630	Ice	.54	.60	.56	.42	.33
	680	Canned food products	.31	.28	.33	.34	.20
19		Manufactured Food	.31	.29	.29	.33	.23
	650	Newsprint paper	.29	.33	.27	.22	.32
	651	Printing paper, N.O.S.	.28	.29	.30	.28	.23
	694	Paper bags and wrapping paper	.28	.29	.31	.27	.24
	695	Paperboard, wallboard	.25	.27	.22	.25	.23
	696	Building paper and roofing	.30	.29	.33	.30	.26
20		Paper and Products	.28	.30	.27	.26	.24
	440	Rosin	.24	.29	.22	.23	.22
	441	Turpentine	.29	.24	.31	.31	.32
	660	Alcohol, denatured or wood	.29	.30	.27	.27	.28
	662	Explosives, N.O.S.	.66	.59	.73	.73	.50
	691	Paints, oil and varnishes	.32	.30	.41	.35	.26
21		Chemicals	.36	.35	.53	.44	.33
	271	Leather	.28	.26	.30	.40	.24
	670	Cotton cloth and fabrics	.22	.25	.20	.25	.23
	671	Bagging and bags	.25	.21	.24	.29	.18
22		Textiles and Leather	.24	.26	.21	.28	.22
	570	Sewer pipe and draintile	.24	.24	.23	.27	.23
	699	Glass, flat, not plate	.40	.35	.54	.37	.60
	700	Glass, Bottles, jars, etc.	.25	.23	.33	.27	.23
23		Glass and Tile	.26	.24	.30	.28	.27
	690	Tobacco, manufactured	.37	.44	.44	.29	.40
	698	Soap and washing compounds	.30	.29	.27	.32	.24
	701	Manufactures miscellaneous	.28	.27	.31	.30	.26
24		Miscellaneous	.28	.27	.32	.30	.27

Analysis 45.13 Average Load of Railway Intermediate Traffic, in Tons - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EASTERN	SOUTHERN	WESTERN	POCAHONTAS
		ALL COMMODITIES	24	28	23	20	30
	10	Wheat	42	43	42	43	36
	20	Corn	37	36	30	38	42
	30	Oats	28	28	22	32	28
	40	Barley and rye	34	30	26	43	31
	162	Flaxseed	33	29	21	40	15
	163	Sugar beets	41	53	3	41	-
01		Bulk Grain and Beets	37	35	36	39	37
	41	Rice	23	25	20	24	36
	42	Grain, N.O.S.	28	24	43	35	49
	50	Flour, wheat	24	25	20	24	21
	51	Meal, corn	23	24	19	27	25
	52	Flour and meal, edible	24	25	15	26	24
	60	Cereal food preparations	17	17	23	17	19
	61	Mill products, N.O.S.	22	22	18	24	20
02		Other Cereals	23	24	19	23	21
	70	Hay and alfalfa	13	14	12	13	13
	71	Straw	14	13	13	29	25
	80	Tobacco, leaf	11	13	10	18	10
	90	Cotton in bales	15	15	15	16	16
	91	Cotton linters, noils, etc.	20	20	18	22	19
03		Cotton, Hay and Tobacco	15	15	14	16	13
	110	Oranges and grapefruit	17	17	17	17	17
	111	Lemons, limes, and citrus	14	14	14	14	17
	120	Apples, fresh	17	17	17	18	14
	121	Bananas	10	11	10	10	14
	122	Berries, fresh	22	19	21	28	7
	123	Cantaloupes and melons	11	11	12	11	13
	124	Grapes, fresh	14	14	14	14	16
	125	Peaches, fresh	12	11	11	13	11
	126	Watermelons	13	13	12	13	14
	127	Fruits, fresh, domestic	13	13	13	13	15
	128	Fruits, fresh, tropical	12	14	12	14	13
	130	Potatoes, other than sweet	17	19	18	16	15
	140	Cabbage	13	13	12	13	12
	141	Onions	13	13	12	13	13
	142	Tomatoes	11	11	10	11	11
	143	Vegetables, fresh, N.O.S.	11	11	11	11	11
04		Perishables	14	14	14	13	14
	150	Beans and peas, dried	27	26	25	28	23
	151	Fruits, dried or evaporated	33	28	34	34	20
	152	Vegetables, dry, N.O.S.	14	15	15	14	16
	161	Peanuts	15	14	15	18	14
	164	Products of agriculture	21	22	20	20	24
	282	Animal products, N.O.S.	19	18	17	20	16
	640	Fertilizers, N.O.S.	33	31	28	40	28
05		Miscellaneous Farm Products	24	23	21	27	21
	170	Horses, mules, ponies	12	11	13	12	16
	180	Cattle and calves, single-deck	11	11	10	11	11
	181	Calves, double-deck	11	10	14	11	-
	190	Sheep, goats, single-deck	8	9	9	8	8
	191	Sheep, goats, double-deck	8	8	9	9	13
	200	Hogs, single-deck	9	10	11	8	19
	201	Hogs, double-deck	12	12	12	12	11
	230	Poultry, live	8	7	9	9	9
	260	Wool	14	13	16	17	15
	270	Hides, green	22	22	23	21	20
	281	Animals, live, N.O.S.	16	12	22	35	17
06		Live Animals	11	12	13	11	13
	210	Fresh meats, N.O.S.	12	12	13	16	13
	220	Meats, cured, dried	15	15	14	17	15
	221	Butterine and margarine	12	12	13	19	9
	222	Packing-house products	17	17	16	19	15
	231	Poultry, dressed	11	11	12	11	16
	240	Eggs	13	12	11	15	11
	250	Butter	12	12	13	12	12
	251	Cheese	14	14	13	15	13
07		Animal Products, Edible	13	12	14	15	14
	290	Anthracite coal	43	43	48	32	38
	300	Bituminous coal	47	53	50	20	51
	310	Coke	31	30	31	32	34
08		Coal and Coke	47	52	50	20	51
	320	Iron ore	76	76	70	60	27
	330	Copper ore concentrates	54	76	43	54	35
	331	Lead ore and concentrates	45	59	48	43	13
	332	Zinc ore and concentrates	53	53	52	53	-
	333	Ores and concentrates	46	40	51	48	50
	392	Products of mines, N.O.S.	37	36	36	38	34
09		Ores	40	42	38	41	35
	350	Gravel and sand	53	42	51	67	37
	351	Stone, broken, ground, etc.	43	42	47	43	34
	352	Stone, rough, N.O.S.	37	39	34	38	34
	353	Stone, finished, N.O.S.	28	27	32	30	24
10		Sand, Stone and Gravel	38	35	38	47	28
	390	Phosphate rock, crude, etc.	51	44	50	63	50
	391	Sulphur (brimstone)	42	43	43	42	63
	661	Sulphuric acid	47	32	52	48	35
11		Sulphur and Sulphuric Acid	44	41	48	43	49
	360	Petroleum, crude	35	31	33	35	8
	370	Asphalt (natural, by-products)	33	29	36	34	34
	450	Petroleum oils, refined	27	28	27	27	27
	451	Fuel, road, and residual oils	30	31	30	30	29
	452	Lubricating oils	21	22	18	22	18
	453	Petroleum products, etc.	25	25	29	24	25
12		Petroleum and Products	27	27	26	28	24
	400	Logs	32	32	31	37	20
	401	Posts, poles, and piling	27	28	28	25	29
	402	Wood (fuel)	34	35	31	34	44
	410	Ties, railroad	34	38	29	34	29
	420	Pulpwood	27	28	26	28	27
	430	Lumber, shingles, and lath	25	23	28	24	23
	431	Box, crate, and cooperage	22	21	21	23	22
	432	Veneer and built-up wood	22	22	15	26	21
	442	Crude rubber (unreclaimed)	38	38	43	39	35
	443	Products of forests, N.O.S.	17	16	18	17	18
13		Forest Products	25	23	27	24	23
	100	Cottonseed	27	31	24	37	17
	101	Cottonseed meal and cake	23	24	23	23	22
	160	Vegetable - oil cake, etc.	24	25	21	29	26
	460	Cottonseed oil	22	28	17	30	29
	461	Linseed oil	25	22	25	28	33
	462	Vegetable oils, N.O.S.	29	27	29	30	30
	280	Fish or sea-animal oil	29	21	30	30	34
14		Oils - Vegetable and Animal	24	25	20	27	24
	490	Iron, pig	53	50	53	57	56
	491	Iron and steel, 6th class	47	47	93	10	26
	500	Rails, fastenings, etc.	35	30	34	37	27
	510	Cast-iron pipe and fittings	24	23	24	24	22
	511	Iron and steel pipe, fittings	30	28	28	33	20
	512	Iron and steel: Nails, wire	25	24	24	30	21
	513	Iron and steel, 5th class	30	28	26	36	25
	583	Railway car wheels, axles	26	18	29	40	27
	692	Furnace slag	51	38	51	10	32
	693	Scrap iron and scrap steel	39	38	46	47	38
15		Iron and Steel	31	29	29	35	25
	520	Copper: Ingot, matte, pig	50	40	57	51	40
	521	Copper, brass and bronze: Bar	21	19	27	47	8
	522	Lead and zinc: Ingot, bar	47	43	48	50	49
	523	Aluminum: Ingot, pig, slab	34	28	42	41	27
16		All Other Metals	46	38	48	50	35
	530	Machinery and boilers	18	17	15	20	15
	580	Agricultural implements, etc.	16	16	17	16	17
	581	Vehicles, horse-drawn, etc.	15	14	13	16	21
	582	Tractors and parts	18	15	16	21	15
	590	Automobiles (passenger)	6	6	6	6	7
	591	Autotrucks	8	8	7	8	6
	592	Automobiles, K.D. and parts	19	18	19	20	12
	593	Automobile tires	14	13	12	16	12
	610	Furniture, metal	12	12	12	15	8
	611	Furniture, not metal	7	8	7	8	7
	697	Building woodwork	21	20	22	22	19
17		Appliances	12	12	11	12	9
	540	Cement, building	36	33	35	43	32
	550	Brick, common	34	34	36	34	35
	551	Brick and building tile	33	34	29	34	36
	552	Artificial stone, N.O.S.	32	31	33	32	30
	560	Lime, common, quick, slaked	24	22	26	25	20
	561	Plaster, stucco, etc.	29	27	31	30	29
18		Building Material	33	31	32	36	29
	380	Salt	26	27	25	27	25
	470	Sugar (beet or cane)	30	25	26	32	30
	471	Table sirups and molasses	32	36	25	32	25
	472	Molasses, blackstrap, etc.	44	37	46	45	-
	620	Beverages	20	17	19	24	18
	630	Ice	44	40	30	23	-
	680	Canned food products	25	22	21	30	23
19		Manufactured Food	27	24	25	30	26
	650	Newsprint paper	26	25	25	27	22
	651	Printing paper, N.O.S.	29	31	22	24	25
	694	Paper bags, wrapping paper	22	21	20	24	22
	695	Paperboard, wallboard	22	21	22	23	19
	696	Building paper, roofing	22	21	22	23	23
20		Paper and Products	24	25	22	25	21
	440	Rosin	24	24	24	26	25
	441	Turpentine	26	26	25	27	27
	660	Alcohol, denatured or wood	24	22	26	26	25
	662	Explosives, N.O.S.	14	13	17	18	14
	691	Paints in oil and varnishes	26	22	21	35	39
21		Chemicals	23	21	24	27	24
	271	Leather	18	18	18	21	14
	670	Cotton cloth and fabrics	10	9	9	16	10
	671	Bagging and bags	19	18	16	20	21
22		Textiles and Leather	12	13	10	18	12
	570	Sewer pipe and draintile	17	18	15	16	16
	699	Glass, flat, not plate	29	25	28	33	26
	700	Glass: Bottles, jars, etc.	24	30	17	17	18
23		Glass and Tile	23	27	17	19	18
	690	Tobacco, manufactured	19	16	18	20	17
	698	Soap and washing compounds	21	20	21	21	20
	701	Manufactures, miscellaneous	20	20	21	21	20
24		Miscellaneous	20	20	21	21	20

Analysis 45.14 Average Haul of Railway Intermediate Traffic, in Miles - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EASTERN	SOUTHERN	WESTERN	POCAHONTAS
		ALL COMMODITIES	232	178	248	372	234
	10	Wheat	206	173	256	206	256
	20	Corn	274	180	226	394	404
	30	Oats	179	224	193	73	388
	40	Barley and rye	206	199	201	207	399
	162	Flaxseed	236	260	301	218	194
	163	Sugar beets	74	120	230	73	-
01		Bulk Grain and Beets	213	190	241	221	319
	41	Rice	370	219	308	478	308
	42	Grain, N.O.S.	277	238	123	419	335
	50	Flour, wheat	242	246	254	220	345
	51	Meal, corn	245	241	240	243	347
	52	Flour and meal, edible	256	258	247	212	476
	60	Cereal food preparations	289	224	398	363	308
	61	Mill products, N.O.S.	227	256	220	204	338
02		Other Cereals	244	243	251	234	345
	70	Hay and alfalfa	189	225	280	85	318
	71	Straw	184	173	225	260	228
	80	Tobacco, leaf	206	168	223	176	372
	90	Cotton in bales	210	265	496	157	299
	91	Cotton linters, noils, etc.	325	370	297	322	243
03		Cotton, Hay and Tobacco	216	256	232	145	316
	110	Oranges and grapefruit	432	334	361	616	121
	111	Lemons, limes, and citrus	592	486	334	650	148
	120	Apples, fresh	415	244	361	497	290
	121	Bananas	288	211	242	365	119
	122	Berries, fresh	518	405	677	706	107
	123	Cantaloupes and melons	559	450	379	610	154
	124	Grapes, fresh	677	519	364	750	191
	125	Peaches, fresh	347	223	375	449	130
	126	Watermelons	360	678	319	390	141
	127	Fruits, fresh, domestic	659	403	469	753	161
	128	Fruits, fresh, tropical	301	242	309	473	305
	130	Potatoes, other than sweet	232	153	395	396	242
	140	Cabbage	400	343	399	507	114
	141	Onions	446	383	315	494	244
	142	Tomatoes	467	446	458	526	113
	143	Vegetables, fresh, N.O.S.	546	463	420	626	135
04		Perishables	447	299	372	598	144
	150	Beans and peas, dried	364	226	320	514	360
	151	Fruits, dried or evaporated	644	331	357	726	651
	152	Vegetables, dry, N.O.S.	357	256	420	492	233
	161	Peanuts	328	234	297	444	460
	164	Products of agriculture	335	250	279	439	656
	282	Animal products, N.O.S.	287	221	365	442	220
	640	Fertilizers, N.O.S.	280	195	261	561	204
05		Miscellaneous Farm Products	337	225	286	541	360
	170	Horses, mules, ponies	296	327	247	313	276
	180	Cattle and calves, single-deck	238	280	236	215	232
	181	Calves, double-deck	178	122	197	444	-
	190	Sheep, goats, single-deck	326	245	121	409	281
	191	Sheep, goats, double-deck	387	279	134	471	262
	200	Hogs, single-deck	282	336	240	242	166
	201	Hogs, double-deck	381	389	192	381	88
	230	Poultry, live	366	356	343	420	292
	260	Wool	324	245	334	518	402
	270	Hides, green	245	240	236	266	244
	281	Animals, live, N.O.S.	153	117	255	466	99
06		Live Animals	301	299	252	310	316
	210	Fresh meats, 7.O.S.	393	399	288	484	379
	220	Meats, cured, dried, etc.	324	297	309	461	431
	221	Butterine and margarine	226	161	379	443	243
	222	Packing-house products	277	261	277	304	454
	231	Poultry, dressed	399	391	268	439	231
	240	Eggs	457	391	269	600	303
	250	Butter	342	344	264	355	357
	251	Cheese	300	290	290	358	357
07		Animal Products, Edible	367	361	289	452	397
	290	Anthracite coal	142	142	187	175	125
	300	Bituminous coal	158	150	169	160	229
	310	Coke	187	146	231	254	397
08		Coal and Coke	157	149	170	163	231
	320	Iron ore	86	84	297	383	197
	330	Copper ore concentrates	101	219	47	214	614
	331	Lead ore and concentrates	76	158	122	68	433
	332	Zinc ore and concentrates	103	70	266	115	-
	333	Ores and concentrates	241	207	270	259	175
	392	Products of mines, N.O.S.	235	164	323	303	225
09		Ores	192	134	307	239	224
	350	Gravel and sand	121	155	97	113	151
	351	Stone, broken, ground, etc.	123	144	102	120	137
	352	Stone, rough, N.O.S.	235	225	248	286	208
	353	Stone, finished, N.O.S.	236	210	271	293	272
10		Sand, Stone and Gravel	168	190	160	139	214
	390	Phosphate rock, crude, etc.	174	142	196	108	421
	391	Sulphur (brimstone)	282	324	275	276	264
	661	Sulphuric acid	225	163	161	576	169
11		Sulphur and Sulphuric Acid	248	255	197	279	338
	360	Petroleum, crude	368	173	150	383	160
	370	Asphalt (natural, by-products)	199	135	185	286	216
	450	Petroleum oils, refined	243	171	174	290	137
	451	Fuel, road and residual oils	284	164	200	325	131
	452	Lubricating oils, etc.	244	194	238	319	210
	453	Petroleum products, N.O.S.	215	146	500	327	216
12		Petroleum and Products	252	170	182	303	162
	400	Logs	187	145	170	255	399
	401	Posts, poles, and piling	261	207	296	295	220
	402	Wood (fuel)	178	150	319	171	223
	410	Ties, railroad	217	216	189	236	279
	420	Pulpwood	114	91	143	140	171
	430	Lumber, shingles, and lath	362	230	344	533	173
	431	Box, crate, and cooperage	288	232	274	393	221
	432	Veneer and built-up wood	357	276	305	467	287
	442	Crude rubber (unreclaimed)	106	100	235	361	609
	443	Products of forests, N.O.S.	234	204	267	367	211
13		Forest Products	328	212	325	489	185
	100	Cottonseed	129	93	106	161	516
	101	Cottonseed meal and cake	280	316	226	264	443
	160	Vegetable - oil cake, etc.	305	251	557	288	260
	460	Cottonseed oil	233	186	262	382	124
	461	Linseed oil	282	55	260	440	139
	462	Vegetable oils, N.O.S.	510	251	370	772	181
	280	Fish or sea-animal oil	414	205	249	620	199
14		Oil - Vegetable and Animal	302	249	253	426	238
	490	Iron, pig	236	184	248	419	254
	491	Iron and steel, 6th class	124	122	93	224	430
	500	Rails, fastenings, etc.	231	155	173	314	107
	510	Cast-iron pipe and fittings	237	195	247	347	217
	511	Iron and steel pipe, fittings	251	215	294	281	241
	512	Iron and steel: Nails, wire	223	191	217	325	275
	513	Iron and steel, 5th class	216	162	232	423	225
	583	Railway car wheels, axles	242	161	197	52	179
	692	Furnace slag	150	87	156	409	441
	693	Scrap iron and scrap steel	130	118	190	210	89
15		Iron and Steel	216	167	224	353	210
	520	Copper: Ingot, matte, pig	504	172	708	596	660
	521	Copper, brass, and bronze	190	157	209	417	270
	522	Lead and zinc: Ingot, bar	408	317	537	458	467
	523	Aluminum: Ingot, pig, slab	227	157	268	123	302
16		All Other Metals	423	260	469	519	407
	530	Machinery and boilers	296	226	278	526	247
	580	Agricultural implements, etc.	318	268	261	409	377
	581	Vehicles, horse-drawn, etc.	327	306	201	446	305
	582	Tractors and parts	415	236	264	564	497
	590	Automobile (Passenger)	315	243	258	477	392
	591	Autotrucks	328	246	231	524	349
	592	Automobiles, K.D. and parts	348	263	335	673	213
	593	Automobile tires	328	221	304	552	292
	610	Furniture, metal	315	260	358	405	300
	611	Furniture, not metal	270	205	278	433	315
	697	Building woodwork	434	365	329	504	368
17		Appliances	326	247	297	535	294
	540	Cement, building	113	88	177	145	193
	550	Brick, common	168	165	169	175	145
	551	Brick and building tile	202	172	250	276	184
	552	Artificial stone, N.O.S.	221	159	223	493	223
	560	Lime, common, quick, slaked	208	175	225	234	308
	561	Plaster, stucco, etc.	246	193	261	304	227
18		Building Material	143	113	198	185	201
	380	Salt	247	194	272	342	249
	470	Sugar (beet or cane)	335	116	224	509	611
	471	Table sirups and molasses	301	259	279	375	487
	472	Molasses, blackstrap, etc.	346	155	467	326	-
	620	Beverages	324	214	380	567	285
	630	Ice	77	49	329	125	-
	680	Canned food products	342	267	255	470	500
19		Manufactured Food	307	215	264	451	467
	650	Newsprint paper	224	174	255	352	209
	651	Printing paper, N.O.S.	230	210	239	428	263
	694	Paper bags, wrapping paper	243	178	287	356	204
	695	Paperboard, wallboard	222	170	300	311	192
	696	Building paper and roofing	221	163	231	352	216
20		Paper and Products	227	180	274	352	211
	440	Rosin	268	212	316	354	200
	441	Turpentine	254	158	380	587	133
	660	Alcohol, denatured or wood	237	163	298	483	201
	662	Explosives, N.O.S.	207	173	225	308	263
	691	Paints in oil and varnishes	279	210	228	585	251
21		Chemicals	254	188	311	464	197
	271	Leather	164	156	171	563	350
	670	Cotton cloth and fabrics	267	173	282	418	324
	671	Bagging and bags	235	172	187	285	497
22		Textile and Leather	237	164	264	324	353
	570	Sewer pipe and draintile	194	204	196	138	247
	699	Glass, flat, not plate	191	110	232	373	284
	700	Glass: Bottles, jars, etc.	263	254	261	300	243
23		Glass and Tile	241	228	243	286	251
	690	Tobacco, manufactured	363	208	243	688	348
	698	Soap and washing compounds	179	115	251	295	481
	701	Manufactures, miscellaneous	238	190	253	400	308
24		Miscellaneous	238	188	252	405	313

Analysis 45.15 Average Revenue of Railway Intermediate Traffic, per Ton Mile - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EASTERN	SOUTHERN	WESTERN	POCAHONTAS
		ALL COMMODITIES	$ .0076	$ .0070	$ .0083	$ .0081	$ .0068
	10	Wheat	.0063	.0048	.0066	.0074	.0083
	20	Corn	.0058	.0061	.0081	.0054	.0057
	30	Oats	.0061	.0055	.0089	.0073	.0053
	40	Barley and rye	.0067	.0060	.0088	.0073	.0053
	162	Flaxseed	.0072	.0046	.0083	.0085	.0082
	163	Sugar beets	.0073	.0197	.0123	.0072	-
01		Bulk Grain and Beets	.0061	.0054	.0071	.0063	.0068
	41	Rice	.0069	.0090	.0084	.0057	.0052
	42	Grain, N.O.S.	.0066	.0065	.0121	.0066	.0080
	50	Flour, wheat	.0063	.0056	.0081	.0065	.0058
	51	Meal, corn	.0060	.0055	.0064	.0066	.0043
	52	Flour and meal	.0059	.0056	.0077	.0070	.0043
	60	Cereal food preparations	.0077	.0078	.0085	.0074	.0078
	61	Mill products, N.O.S.	.0061	.0055	.0079	.0066	.0061
02		Other Cereals	.0063	.0057	.0081	.0066	.0059
	70	Hay and alfalfa	.0081	.0078	.0073	.0091	.0087
	71	Straw	.0102	.0112	.0061	.0090	.0110
	80	Tobacco, leaf	.0133	.0126	.0141	.0120	.0129
	90	Cotton in bales	.0105	.0072	.0096	.0156	.0065
	91	Cotton linters, noils	.0065	.0048	.0074	.0096	.0087
03		Cotton, Hay and Tobacco	.0096	.0074	.0095	.0138	.0102
	110	Oranges and grapefruit	.0099	.0086	.0120	.0095	.0139
	111	Lemons, limes, and citrus	.0092	.0073	.0091	.0095	.0136
	120	Apples, fresh	.0089	.0091	.0083	.0089	.0118
	121	Bananas	.0187	.0182	.0185	.0189	.0279
	122	Berries, fresh	.0087	.0090	.0091	.0069	.0422
	123	Cantaloupes and melons	.0090	.0091	.0091	.0089	.0153
	124	Grapes, fresh	.0093	.0082	.0086	.0096	.0112
	125	Peaches, fresh	.0159	.0116	.0132	.0171	.0190
	126	Watermelons	.0076	.0031	.0096	.0112	.0127
	127	Fruits, fresh, domestic	.0100	.0095	.0088	.0102	.0162
	128	Fruits, fresh, tropical	.0109	.0120	.0106	.0117	.0113
	130	Potatoes, other than sweet	.0094	.0115	.0090	.0074	.0083
	140	Cabbage	.0095	.0099	.0148	.0075	.0131
	141	Onions	.0085	.0086	.0113	.0082	.0114
	142	Tomatoes	.0108	.0097	.0135	.0104	.0146
	143	Vegetables, fresh, N.O.S.	.0098	.0090	.0138	.0094	.0155
04		Perishables	.0097	.0092	.0116	.0094	.0130
	150	Beans and peas, dried	.0081	.0095	.0096	.0073	.0076
	151	Fruits, dried or evaporated	.0084	.0062	.0085	.0085	.0060
	152	Vegetables, dry, N.O.S.	.0096	.0107	.0097	.0088	.0088
	161	Peanuts	.0116	.0116	.0127	.0099	.0102
	164	Products of Agriculture	.0081	.0070	.0089	.0055	.0059
	282	Animal products, N.O.S.	.0120	.0121	.0114	.0125	.0100
	640	Fertilisers, N.O.S.	.0056	.0065	.0062	.0044	.0061
05		Miscellaneous Farm Products	.0080	.0081	.0087	.0078	.0071
	170	Horses, mules, ponies	.0162	.0204	.0169	.0136	.0173
	180	Cattle and calves, single-deck	.0099	.0093	.0137	.0101	-
	181	Calves, double-deck	.0114	.0126	.0118	.0095	-
	190	Sheep and goats, single-deck	.0098	.0102	.0173	.0093	.0170
	191	Sheep and goats, double-deck	.0101	.0094	.0169	.0104	.0160
	200	Hogs, single-deck	.0120	.0096	.0157	.0143	.0137
	201	Hogs, double-deck	.0092	.0086	.0159	.0107	.0119
	230	Poultry, live	.0209	.0196	.0252	.0218	.0262
	260	Wool	.0130	.0137	.0138	.0119	.0129
	270	Hides, green	.0096	.0091	.0102	.0111	.0085
	281	Animals, live, N.O.S.	.0147	.0157	.0128	.0154	.0106
06		Live Animals	.0109	.0104	.0149	.0110	.0140
	210	Fresh meats, N.O.S.	.0129	.0128	.0159	.0108	.0109
	220	Meats, cured, dried	.0123	.0105	.0137	.0155	.0099
	221	Butterine and margarine	.0192	.0184	.0216	.0187	.0163
	222	Packing-house products	.0112	.0092	.0138	.0130	.0107
	231	Poultry, dressed	.0174	.0180	.0208	.0154	.0121
	240	Eggs	.0148	.0158	.0249	.0131	.0221
	250	Butter	.0171	.0174	.0223	.0142	.0114
	251	Cheese	.0166	.0154	.0201	.0201	.0154
07		Animal Products, Edible	.0139	.0138	.0156	.0132	.0115
	290	Anthracite coal	.0064	.0064	.0065	.0076	.0080
	300	Bituminous coal	.0048	.0048	.0047	.0051	.0049
	310	Coke	.0064	.0075	.0051	.0055	.0048
08		Coal and coke	.0050	.0050	.0048	.0051	.0049
	320	Iron ore	.0048	.0048	.0060	.0046	.0044
	330	Copper ore concentrates	.0088	.0051	.0160	.0059	.0042
	331	Lead ore and concentrates	.0076	.0056	.0035	.0083	.0042
	332	Zinc ore and concentrates	.0060	.0070	.0066	.0052	-
	333	Ores and concentrates, N.O.S.	.0050	.0050	.0049	.0052	.0054
	392	Products of mines, N.O.S.	.0056	.0061	.0049	.0053	.0062
09		Ores	.0055	.0060	.0050	.0053	.0062
	350	Gravel, sand, etc.	.0056	.0056	.0049	.0057	.0063
	351	Stone, broken, ground, etc.	.0052	.0046	.0053	.0058	.0062
	352	Stone, rough, N.O.S.	.0053	.0056	.0039	.0065	.0057
	353	Stone, finished, N.O.S.	.0067	.0071	.0060	.0065	.0066
10		Sand, Stone and Gravel	.0057	.0059	.0049	.0059	.0062
	390	Phosphate rock, crude, etc.	.0054	.0077	.0049	.0065	.0054
	391	Sulphur (brimstone)	.0045	.0050	.0057	.0043	.0045
	661	Sulphuric acid	.0063	.0101	.0066	.0050	.0092
11		Sulphur and Sulphuric Acid	.0050	.0060	.0057	.0045	.0058
	360	Petroleum, crude	.0056	.0077	.0093	.0055	.0071
	370	Asphalt (natural) etc.	.0077	.0086	.0079	.0072	.0071
	450	Petroleum oils, refined, etc.	.0082	.0102	.0107	.0074	.0119
	451	Fuel, road, residual oils	.0061	.0090	.0081	.0056	.0114
	452	Lubricating oils and greases	.0091	.0096	.0010	.0082	.0088
	453	Petroleum products, N.O.S.	.0080	.0088	.0056	.0085	.0083
12		Petroleum and Products	.0078	.0099	.0103	.0070	.0103
	400	Logs	$ .0063	$ .0073	$ .0054	$ .0065	$ .0055
	401	Posts, poles, and piling	.0063	.0065	.0067	.0064	.0057
	402	Wood (fuel)	.0068	.0074	.0068	.0066	.0072
	410	Ties, railroad	.0070	.0066	.0074	.0076	.0064
	420	Pulpwood	.0077	.0089	.0053	.0079	.0059
	430	Lumber, shingles, and lath	.0056	.0063	.0053	.0054	.0072
	431	Box, crate, and cooperage	.0065	.0066	.0067	.0063	.0067
	432	Veneer and built-up wood	.0061	.0063	.0063	.0056	.0080
	442	Crude rubber (unreclaimed)	.0100	.0100	.0095	.0104	.0080
	443	Products of forests, N.O.S.	.0083	.0086	.0077	.0078	.0079
13		Forest Products	.0058	.0066	.0055	.0055	.0070
	100	Cottonseed	.0101	.0124	.0094	.0106	.0149
	101	Cottonseed meal and cake	.0057	.0048	.0058	.0073	.0031
	160	Vegetable - oil cake, etc.	.0058	.0061	.0048	.0075	.0065
	460	Cottonseed oil	.0078	.0052	.0083	.0081	.0101
	461	Linseed oil	.0091	.0034	.0158	.0077	.0120
	462	Vegetable oils, N.O.S.	.0053	.0068	.0049	.0050	.0070
	280	Fish or sea-animal oil	.0054	.0081	.0065	.0047	.0102
14		Oils - Vegetable and Animal	.0062	.0060	.0069	.0062	.0053
	490	Iron, pig	.0049	.0052	.0054	.0038	.0056
	491	Iron and steel, 6th Class	.0082	.0081	.0016	.0097	.0077
	500	Rails, fastenings, frogs	.0060	.0085	.0075	.0046	.0151
	510	Cast-iron pipe and fittings	.0087	.0084	.0086	.0095	.0086
	511	Iron and steel pipe, fittings	.0101	.0087	.0086	.0114	.0094
	512	Iron and steel: Nails, wire	.0099	.0092	.0111	.0108	.0082
	513	Iron and steel, 5th Class	.0088	.0093	.0109	.0076	.0097
	583	Railway car wheels, axles	.0099	.0097	.0132	.0088	.0122
	692	Furnace slag	.0036	.0065	.0034	.0051	.0078
	693	Scrap iron and scrap steel	.0071	.0073	.0053	.0074	.0095
15		Iron and Steel	.0087	.0088	.0085	.0085	.0092
	520	Copper: Ingot, matte, pig	.0053	.0073	.0025	.0052	.0054
	521	Copper, brass, and bronze	.0097	.0104	.0157	.0063	.0157
	522	Lead and zinc: Ingot, Bar	.0045	.0045	.0042	.0046	.0029
	523	Aluminum: Ingot, pig, slab	.0123	.0124	.0132	.0208	.0089
16		All Other Metals	.0051	.0056	.0055	.0049	.0051
	530	Machinery and boilers	.0115	.0097	.0149	.0128	.0105
	580	Agricultural implements, etc.	.0123	.0097	.0140	.0143	.0090
	581	Vehicles, horse-drawn, etc.	.0141	.0107	.0203	.0170	.0099
	582	Tractors and parts	.0117	.0118	.0147	.0117	.0073
	590	Automobiles (passenger)	.0283	.0256	.0349	.0299	.0279
	591	Autotrucks	.0227	.0181	.0286	.0258	.0189
	592	Automobiles, K.D. and parts	.0123	.0110	.0134	.0134	.0181
	593	Automobile tires	.0137	.0128	.0200	.0131	.0167
	610	Furniture, metal	.0130	.0118	.0137	.0146	.0143
	611	Furniture, not metal	.0173	.0166	.0144	.0176	.0184
	697	Building woodwork (millwork)	.0058	.0060	.0075	.0055	.0077
17		Appliances	.0152	.0138	.0173	.0160	.0173
	540	Cement, building	.0085	.0100	.0066	.0074	.0062
	550	Brick, common	.0061	.0061	.0052	.0067	.0073
	551	Brick, and building tile	.0058	.0061	.0055	.0053	.0064
	552	Artificial stone, N.O.S.	.0075	.0075	.0093	.0067	.0060
	560	Lime, common (quick slaked)	.0062	.0068	.0053	.0069	.0050
	561	Plaster (stucco or wall) etc.	.0063	.0070	.0057	.0059	.0070
18		Building Material	.0074	.0084	.0061	.0067	.0062
	380	Salt	.0063	.0061	.0062	.0067	.0063
	470	Sugar (beet or cane)	.0086	.0106	.0094	.0085	.0059
	471	Table sirups and molasses	.0075	.0079	.0082	.0068	.0079
	472	Molasses, blackstrap, etc.	.0052	.0086	.0043	.0057	-
	620	Beverages	.0087	.0100	.0089	.0074	.0094
	630	Ice	.0144	.0206	.0077	.0098	-
	680	Canned food products	.0085	.0085	.0125	.0081	.0059
19		Manufactured Food	.0078	.0079	.0080	.0079	.0060
	650	Newsprint paper	.0074	.0084	.0074	.0061	.0079
	651	Printing paper, N.O.S.	.0071	.0066	.0107	.0079	.0102
	694	Paper bags, wrapping paper	.0084	.0090	.0086	.0078	.0080
	695	Paperboard, wallboard	.0078	.0079	.0072	.0082	.0082
	696	Building paper and roofing	.0087	.0084	.0101	.0081	.0086
20		Paper and Products	.0077	.0080	.0083	.0069	.0086
	440	Rosin	.0069	.0075	.0068	.0065	.0058
	441	Turpentine	.0099	.0086	.0111	.0083	.0095
	660	Alcohol, denatured or wood	.0092	.0102	.0087	.0079	.0139
	662	Explosives, N.O.S.	.0250	.0237	.0229	.0295	.0223
	691	Paints, oil and varnishes	.0098	.0095	.0153	.0082	.0154
21		Chemicals	.0103	.0112	.0088	.0107	.0113
	271	Leather	.0113	.0112	.0129	.0134	.0106
	670	Cotton cloth and fabrics	.0139	.0140	.0141	.0145	.0125
	671	Bagging and bags	.0103	.0090	.0122	.0111	.0054
22		Textiles and Leather	.0128	.0119	.0139	.0123	.0108
	570	Sewer pipe and draintile	.0073	.0067	.0080	.0096	.0080
	699	Glass, flat, not plate	.0104	.0112	.0179	.0088	.0112
	700	Glass: Bottles, jars, etc.	.0073	.0050	.0139	.0117	.0097
23		Glass and Tile	.0076	.0056	.0130	.0109	.0097
	690	Tobacco, manufactured	.0134	.0156	.0146	.0119	.0159
	698	Soap and washing compounds	.0104	.0104	.0104	.0123	.0057
	701	Manufactures miscellaneous	.0096	.0093	.0107	.0100	.0088
24		Miscellaneous	.0097	.0093	.0109	.0101	.0089

Analysis 45.16 Average Revenue of Railway Intermediate Traffic, per Loaded Car Mile - 1932

GROUP NO.	ICC NO.	COMMODITY	UNITED STATES	EASTERN	SOUTHERN	WESTERN	POCAHONTAS
		ALL COMMODITIES	$ .18	$ .20	$ .19	$ .16	$ .20
	10	Wheat	.27	.20	.28	.32	.30
	20	Corn	.21	.22	.25	.20	.24
	30	Oats	.17	.15	.20	.23	.14
	40	Barley and rye	.23	.18	.23	.31	.16
	162	Flaxseed	.24	.13	.18	.34	.12
	163	Sugar beets	.30	1.04	.03	.30	-
01		Bulk Grain and Beets	.22	.19	.26	.25	.25
	41	Rice	.15	.22	.17	.13	.19
	42	Grain, N.O.S.	.18	.16	.52	.23	.39
	50	Flour, wheat	.15	.14	.16	.16	.12
	51	Meal, corn	.14	.13	.12	.18	.11
	52	Flour and meal	.14	.14	.12	.18	.10
	60	Cereal food preparations	.13	.13	.19	.12	.15
	61	Mill products, N.O.S.	.13	.12	.14	.16	.12
02		Other Cereals	.14	.13	.15	.15	.12
	70	Hay and alfalfa	.10	.11	.09	.12	.11
	71	Straw	.14	.15	.08	.26	.28
	80	Tobacco, leaf	.15	.16	.14	.21	.14
	90	Cotton in bales	.16	.11	.15	.25	.10
	91	Cotton linters, noils	.13	.10	.14	.21	.16
03		Cotton, Hay and Tobacco	.14	.11	.13	.22	.13
	110	Oranges and grapefruit	.17	.15	.20	.16	.24
	111	Lemons, limes, and citrus	.13	.10	.13	.14	.24
	120	Apples, fresh	.16	.15	.14	.16	.16
	121	Bananas	.20	.20	.19	.20	.39
	122	Berries, fresh	.20	.17	.19	.19	.29
	123	Cantaloupes and melons	.10	.10	.11	.10	.20
	124	Grapes, fresh	.13	.11	.12	.13	.18
	125	Peaches, fresh	.19	.16	.15	.22	.21
	126	Watermelons	.10	.04	.12	.14	.18
	127	Fruits, fresh, domestic	.13	.13	.12	.14	.24
	128	Fruits, fresh, tropical	.14	.17	.13	.17	.15
	130	Potatoes, other than sweet	.16	.22	.16	.12	.12
	140	Cabbage	.12	.13	.18	.10	.16
	141	Onions	.11	.11	.14	.11	.15
	142	Tomatoes	.12	.11	.14	.11	.17
	143	Vegetables, fresh, N.O.S.	.11	.10	.16	.11	.18
04		Perishables	.13	.13	.16	.13	.19
	150	Beans and peas, dried	.22	.24	.24	.20	.18
	151	Fruits, dried or evaporated	.28	.23	.29	.29	.12
	152	Vegetables, dry, N.O.S.	.14	.16	.14	.12	.14
	161	Peanuts	.17	.17	.19	.18	.14
	164	Products of agriculture	.17	.15	.18	.19	.14
	282	Animal products, N.O.S.	.23	.22	.19	.26	.17
	640	Fetrilisers, N.O.S.	.18	.20	.18	.18	.17
05		Miscellaneous Farm Products	.19	.19	.19	.21	.15
	170	Horses, mules, ponies	.20	.24	.22	.16	.28
	180	Cattle and calves, single-deck	.11	.10	.14	.11	.16
	181	Calves, double-deck	.13	.13	.17	.11	-
	190	Sheep and goats, single-deck	.08	.09	.16	.08	.13
	191	Sheep and goats, double-deck	.09	.08	.16	.09	.21
	200	Hogs, single-deck	.11	.09	.17	.11	.27
	201	Hogs, double-deck	.11	.10	.19	.13	.13
	230	Poultry, live	.17	.15	.24	.20	.23
	260	Wool	.19	.18	.22	.20	.19
	270	Hides, green	.21	.21	.24	.23	.17
	281	Animals, live, N.O.S.	.23	.20	.29	.59	.18
06		Live Animals	.12	.12	.20	.12	.19
	210	Fresh meats, N.O.S.	.16	.15	.21	.17	.14
	220	Meats, cured, dried	.19	.16	.20	.27	.15
	221	Butterine and margarine	.23	.22	.28	.35	.15
	222	Packing-house products	.20	.17	.22	.25	.16
	231	Poultry, dressed	.20	.20	.25	.18	.19
	240	Eggs	.19	.19	.27	.19	.23
	250	Butter	.20	.21	.29	.17	.26
	251	Cheese	.23	.21	.27	.30	.21
07		Animal Products, Edible	.18	.17	.22	.20	.16
	290	Anthracite coal	.28	.28	.31	.24	.30
	300	Bituminous coal	.23	.26	.24	.10	.25
	310	Coke	.20	.23	.16	.18	.16
08		Coal and Coke	.23	.26	.23	.10	.25
	320	Iron ore	.36	.37	.42	.28	.12
	330	Copper ore concentrates	.48	.39	.69	.32	.15
	331	Lead ore and concentrates	.34	.33	.17	.36	.05
	332	Zinc ore and concentrates	.32	.37	.34	.28	-
	333	Ores and concentrates	.23	.20	.25	.25	.27
	392	Products of mines, N.O.S.	.21	.23	.18	.20	.21
09		Ores	.22	.25	.19	.22	.22
	350	Gravel, sand, etc.	.29	.23	.25	.38	.22
	351	Stone, broken, ground, etc.	.23	.19	.25	.25	.21
	352	Stone, rough, N.O.S.	.19	.22	.13	.24	.19
	353	Stone, finished, N.O.S.	.19	.19	.19	.19	.15
10		Sand, Stone and Gravel	.22	.21	.18	.28	.17
	390	Phosphate rock, crude, etc.	.27	.34	.24	.41	.27
	391	Sulphur (brimstone)	.19	.21	.25	.18	.28
	661	Sulphuric acid	.30	.33	.34	.24	.33
11		Sulphur and Sulphuric Acid	.22	.25	.28	.19	.28
	360	Petroleum, crude	.19	.24	.31	.19	.05
	370	Asphalt (natural) etc.	.25	.25	.28	.25	.24
	450	Petroleum oils, refined	.22	.28	.28	.20	.32
	451	Fuel, road, residual oils	.18	.28	.24	.17	.33
	452	Lubricating oils and greases	.19	.21	.19	.18	.16
	453	Petroleum products, N.O.S.	.20	.22	.16	.20	.20
12		Petroleum and Products	.21	.23	.27	.19	.25
	400	Logs	$ .20	$ .24	$ .17	$ .24	$ .10
	401	Posts, poles, and piling	.17	.18	.19	.16	.16
	402	Wood (fuel)	.23	.26	.21	.23	.32
	410	Ties, railroad	.24	.25	.21	.26	.19
	420	Pulpwood	.21	.24	.14	.22	.16
	430	Lumber, shingles, and lath	.14	.14	.15	.13	.17
	431	Box, crate, and cooperage	.14	.14	.14	.14	.15
	432	Veneer and built-up wood	.13	.14	.10	.14	.17
	442	Crude rubber (unreclaimed)	.38	.38	.41	.41	.28
	443	Products of forests, N.O.S.	.14	.14	.14	.13	.14
13		Forest Products	.14	.15	.15	.13	.16
	100	Cottonseed	.27	.39	.23	.39	.25
	101	Cottonseed meal and cake	.13	.11	.13	.17	.07
	160	Vegetable - oil cake, etc.	.14	.15	.10	.22	.17
	460	Cottonseed oil	.17	.19	.14	.24	.29
	461	Linseed oil	.22	.21	.40	.21	.40
	462	Vegetable oils, N.O.S.	.16	.18	.14	.15	.21
	280	Fish or sea-animal oil	.16	.17	.20	.14	.35
14		Oils - Vegetable and Animal	.15	.15	.14	.17	.13
	490	Iron, pig	.26	.26	.28	.21	.31
	491	Iron and steel, 6th Class	.39	.38	1.54	1.03	.20
	500	Rails, fastenings, etc.	.21	.25	.25	.17	.41
	510	Cast-iron pipe and fittings	.20	.19	.21	.23	.19
	511	Iron and steel pipe, fittings	.30	.24	.24	.37	.19
	512	Iron and steel: Nails, wire	.25	.22	.26	.33	.17
	513	Iron and steel, 5th Class	.27	.26	.29	.28	.25
	583	Railway car wheels, axles	.26	.17	.39	.35	.33
	692	Furnace slag	.18	.25	.17	.52	.25
	693	Scrap iron and scrap steel	.28	.27	.24	.35	.37
15		Iron and Steel	.27	.25	.25	.30	.23
	520	Copper: Ingot, matte, pig	.26	.29	.14	.26	.22
	521	Copper, brass, and bronze	.21	.19	.43	.30	.13
	522	Lead and zinc: Ingot, Bar	.21	.19	.20	.23	.14
	523	Aluminum: Ingot, pig, slab	.42	.35	.56	.85	.24
16		All Other Metals	.24	.21	.26	.25	.18
	530	Machinery and boilers	.20	.16	.23	.26	.16
	580	Agricultural implements, etc.	.20	.16	.24	.23	.15
	581	Vehicles, horse-drawn, etc.	.22	.15	.27	.28	.20
	582	Tractors and parts	.22	.17	.23	.24	.11
	590	Automobiles (passenger)	.17	.16	.21	.18	.20
	591	Autotrucks	.18	.15	.21	.21	.13
	592	Automobiles, K.D. and parts	.23	.20	.26	.27	.23
	593	Automobile tires	.20	.17	.25	.21	.20
	610	Furniture, metal	.16	.14	.16	.19	.12
	611	Furniture, not metal	.13	.13	.12	.14	.13
	697	Building woodwork (millwork)	.12	.12	.16	.12	.15
17		Appliances	.18	.16	.20	.20	.16
	540	Cement, building	.31	.33	.23	.32	.20
	550	Brick, common	.21	.21	.19	.23	.26
	551	Brick and building tile	.19	.21	.16	.18	.23
	552	Artificial stone, N.O.S.	.24	.24	.31	.22	.18
	560	Lime, common (quick, slaked)	.15	.15	.14	.18	.10
	561	Plaster (stucco or wall) etc.	.18	.19	.18	.17	.20
18		Building Material	.24	.26	.19	.24	.18
	380	Salt	.16	.16	.16	.18	.16
	470	Sugar (beet or cane)	.26	.27	.24	.27	.18
	471	Table sirups and molasses	.24	.29	.21	.22	.20
	472	Molasses, blackstrap, etc.	.23	.32	.20	.25	-
	620	Beverages	.17	.17	.17	.18	.17
	630	Ice	.64	.82	.23	.56	-
	680	Canned food products	.21	.19	.26	.24	.14
19		Manufactured Food	.21	.19	.20	.24	.16
	650	Newsprint paper	.19	.21	.19	.16	.17
	651	Printing paper, N.O.S.	.21	.20	.24	.19	.26
	694	Paper bags and wrapping paper	.19	.19	.18	.18	.18
	695	Paperboard, wallboard	.17	.16	.16	.19	.15
	696	Building paper and roofing	.19	.18	.22	.19	.20
20		Paper and Products	.19	.20	.18	.18	.18
	440	Rosin	.17	.18	.16	.17	.15
	441	Turpentine	.26	.23	.28	.23	.26
	660	Alcohol, denatured or wood	.22	.23	.23	.20	.35
	662	Explosives, N.O.S.	.36	.30	.40	.54	.33
	691	Paints, oil and varnishes	.26	.21	.33	.29	.61
21		Chemicals	.24	.23	.21	.29	.26
	271	Leather	.20	.20	.24	.29	.15
	670	Cotton cloth and fabrics	.14	.13	.13	.23	.13
	671	Bagging and bags	.19	.16	.20	.23	.12
22		Textiles and Leather	.15	.16	.14	.23	.13
	570	Sewer pipe and draintile	.12	.12	.12	.15	.12
	699	Glass, flat, not plate	.30	.28	.51	.29	.29
	700	Glass: Bottles, jars, etc.	.17	.15	.25	.20	.17
23		Glass and Tile	.17	.15	.23	.21	.18
	690	Tobacco, manufactured	.25	.26	.27	.24	.27
	698	Soap and washing compounds	.22	.21	.22	.26	.11
	701	Manufactures miscellaneous	.20	.19	.22	.21	.17
24		Miscellaneous	.20	.19	.23	.21	.17

Analysis 45.17 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of All Commodities and Rough Material - 1932

RATING GROUP STATISTICAL GROUP	PERCENTAGES OF ALL TRAFFIC			AVERAGES HAUL	LOAD		REVENUES TOTAL	TERMINAL	LINE	VALUE
	REVENUE	TONS	EQUATED TON MILES	MILES	NET TONS	EQUA-TED TONS	PER TON	PER EQUATED TON	PER EQUATED TON-MILE	PER TON #
ALL COMMODITIES	100.00%	100.00%	100.00%	353	34.5	56	$3.64	$ .63	$.00415	$31.88
I ROUGH MATERIAL	2.75%	10.04%	2.16%	92	48	68	$ .99	$ .52	$.00194	$ 1.59
10 Sand, Stone, Gravel	1.78%	7.39%	1.28%	79	55	76	$ .87	$ .46	$.00218	$ .81
100 Gravel, Sand	1.04	4.57	.70	70	56	77	.82	.46	.00196	.49
101 Crushed Stone	.59	2.42	.46	86	55	76	.89	.46	.00216	.64
102 Rough Stone, NOSH	.15	.40	.12	136	50	67	1.36	.53	.00356	5.46
109 Sand, Stone, Gravel, NOSH	-	-	-	-	-	-	-	-	-	-
11 Timber	.82%	1.79%	.79%	170	32	51	$1.65	$ .70	$.00202	$ 3.04
110 Logs	.13	.83	.11	56	35	52	.59	.39	-	3.05
111 Posts, Poles, Piling	.33	.24	.32	505	27	44	4.84	.80	.00429	2.90
112 Ties	.12	.13	.11	313	31	52	3.30	.68	.00415	7.62
113 Pulpwood	.20	.55	.21	149	33	54	1.33	.66	.00101	1.99
119 Timber, NOSH	.04	.04	.04	322	20	40	3.81	.87	.00319	3.07
12 Rough Vegetables	.15%	.86%	.09%	47	45	66	$ .64	$ .44	-	$ 5.32
120 Sugar Beets	.15	.86	.09	47	45	66	.64	.44	-	5.32
121 Sugar Cane	-	-	-	-	-	-	-	-	-	-
129 Rough Vegetables, NOSH	-	-	-	-	-	-	-	-	-	-
19 Miscellaneous*	-	-	-	-	-	-	-	-	-	-

AGGREGATE STATISTICS USED IN ANALYSES 45.17 - 45.24

	REVENUES ∮ TOTAL (000)	TERMINAL PER CAR	CARS ORIGINATED (000)	REVENUE TONS ORIGINATED (000)	REVENUE TON MILES (000,000)	EQUATED TON MILES (000,000)
UNITED STATES	$2,278,377	$ 35.26	18,147	626,078	220,994	394,617
EASTERN	976,618	31.32	-	-	91,881	-
POCAHONTAS	161,472	29.94	-	-	26,302	-
SOUTHERN	275,939	36.54	-	-	26,110	-
WESTERN	864,348	42.18	-	-	76,701	-

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* Included in Statistical Group No.59, Analysis 45.5

# I.C.C. value at point of production. or from studies by Section of Transportation Service. All statistics except value of Commodities (which are for 1933) based on returns to Carload Traffic Survey, Form 110, year 1932.

∮ Line Revenues - Total Revenues less Terminal Revenues.

Analysis 45.18 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Raw Materials - 1932

RATING GROUP STATISTICAL GROUP	PERCENTAGES OF ALL TRAFFIC			AVERAGES HAUL	LOAD		REVENUES TOTAL	TERMINAL	LINE	VALUE
	REVENUE	TONS	EQUATED TON MILES	MILES	NET TONS	EQUA-TED TONS	PER TON	PER EQUATED TON	PER EQUATED TON-MILE	PER TON #
II RAW MATERIAL	52.80%	62.92%	59.49%	357	43	64	$ 3.05	$ .56	$.00366	$ 8.41
II RAW MATERIAL, INCLUDING GROUP 44	54.60%	64.54%	62.25%	362	40	62	$ 3.08	$ .57	$.00361	$ -
20 Grain	5.34%	6.05%	4.37%	303	40	60	$ 3.21	$ .58	$.00509	$19.31
200 Wheat	2.92	3.18	2.35	319	44	65	3.34	.54	.00546	21.57
201 Corn	1.31	1.56	1.08	291	40	61	3.07	.58	.00501	11.14
202 Oats	.47	.56	.48	329	32	53	3.05	.67	.00362	15.08
203 Barley and Rye	.20	.25	.17	277	39	60	2.93	.59	.00483	18.24
204 Rice	.11	.10	.08	320	27	48	4.18	.74	.00518	52.57
205 Cottonseed	.17	.28	.08	101	27	48	2.15	.74	.00486	13.08
206 Flaxseed	.05	.05	.03	304	38	59	3.81	.60	.00618	52.84
207 Seed, NOSH	.09	.06	.08	427	24	45	5.01	.79	.00452	101.24
209 Grain, NOSH	.02	.01	.02	505	28	48	4.76	.73	.00398	22.13
21 Animal Feeds	1.22%	1.35%	1.70%	418	23	43	$ 3.31	$ .81	$.00220	$16.93
210 Mill Products, Mixed Feeds	.79	.99	1.24	408	22	43	2.88	.82	.00166	16.51
211 Cottonseed, Meal and Cake	.27	.23	.31	461	25	45	4.23	.78	.00332	17.29
212 Meal and Cake, NOSH	.04	.05	.05	399	25	45	3.40	.78	.00272	23.58
219 Animal Feeds, NOSH	.12	.08	.10	433	23	44	5.56	.80	.00500	16.93
22 Fresh Vegetables	8.08%	1.30%	10.81%	1761	14	41	$22.59	$ .85	$.00383	$16.05
220 Citrus Fruits	2.36	.32	2.85	2154	17	45	26.58	.78	.00443	34.58
221 Grapes	.85	.10	1.24	2597	14	42	29.97	.84	.00363	17.82
222 Apples	.89	.22	1.11	1162	16	44	14.65	.81	.00397	27.26
223 Peaches	.18	.04	.17	843	13	41	15.33	.86	.00495	31.50
224 Melons	.58	.11	.91	1694	12	40	19.84	.88	.00314	16.19
225 Berries	.06	.01	.06	1200	10	38	24.96	.93	.00491	93.88
226 Tropical Fruits	.48	.12	.48	739	11	38	15.24	.92	.00456	91.45
227 Domestic Fruits, NOSH	.45	.07	.59	1754	14	42	22.16	.84	.00386	30.40
228 Tomatoes	.30	.04	.45	1893	11	39	25.22	.91	.00341	20.60
229 Fresh Vegetables, NOSH	1.93	.27	2.95	2062	12	39	26.48	.90	.00335	37.45
23 Live Animals	3.32%	1.65%	3.27%	448	11	31	$ 7.34	$1.15	$.00332	$77.28
230 Kine	1.46	.79	1.38	410	12	31	6.75	1.13	.00338	68.51
231 Sheep and Goats	.43	.18	.52	605	10	29	8.76	1.20	.00286	74.94
232 Swine	1.18	.62	1.17	421	11	30	6.85	1.16	.00303	81.69
233 Poultry	.13	.02	.11	1207	9	31	27.24	1.14	.00589	217.13
234 Draft (Horses, Mules, etc.)	.12	.04	.09	594	12	31	11.81	1.13	.00559	122.88
239 Live Animals, NOSH	-	-	-	340	11	30	7.78	1.16	.00484	145.34
24 Dry Fuels	27.04%	43.47%	30.77%	318	51	72	$ 2.26	$ .49	$.00353	$ 1.97
240 Anthracite Coal	4.75	8.78	3.43	174	51	72	1.96	.49	.00515	4.32
241 Bituminous Coal	21.55	33.28	26.73	362	53	74	2.36	.48	.00334	1.24
242 Coke	.68	1.19	.56	182	33	54	2.07	.66	.00333	5.10
243 Wood (Fuel)	.06	.22	.05	89	30	51	.98	.58	-	1.56
249 Dry Fuels, NOSH										
25 Crude Liquids	1.59%	1.70%	1.43%	314	34	57	$ 3.41	$ .61	$.00447	$ 5.77
250 Petroleum, Crude	.38	.43	.46	403	34	58	3.23	.61	.00325	5.98
259 Fuel, Road, Oil, NOSH	1.21	1.27	.97	284	34	57	3.47	.61	.00505	5.70
26 Ores	1.72%	3.94%	1.74%	198	53	74	$ 1.59	$ .40	$.00331	$15.52
260 Iron	.29	.94	.27	134	61	82	1.11	.43	.00294	4.08
261 Copper	.02	.32	.02	30	55	76	.28	.09	-	5.28
262 Lead	.03	.15	.02	52	52	73	.72	.13	.00066	24.63
263 Zinc	.08	.13	.10	352	49	70	2.31	.50	.00317	14.69
264 Sulphur	.12	.23	.12	245	55	76	1.95	.47	.00384	16.07
269 Ores, NOSH	1.18	2.17	1.21	246	49	70	1.97	.50	.00359	21.35
27 Lumber	3.63%	2.19%	4.62%	737	25	46	$ 6.04	$ .77	$.00349	$19.62
270 Barrel, Crate & Cooperage	.49	.27	.53	636	23	43	6.51	.82	.00407	21.97
271 Lumber, Shingles and Lath	2.98	1.83	3.87	747	26	47	5.93	.76	.00343	17.03
272 Veneers	.04	.02	.06	1225	23	43	9.10	.82	.00323	70.37
273 Millwork, Sash, Doors, etc.	.08	.03	.12	1449	18	39	10.92	.91	.00292	104.00
279 Lumber, NOSH	.04%	.04%	.04%	322	20	41	$ 3.81	$ .87	$.00319	$33.70
28 Fertilizers	.86	1.27	.78	226	31	52	2.45	.68	.00341	12.40
280 Phosphate Rock	.13	.46	.11	112	51	72	9.91	.49	.00193	2.99
289 Fertilizers, NOSH	.73%	.81%	.67%	289	26	46	$ 3.28	$ .76	$.00366	$17.75
29 Miscellaneous*	-	-	-	-	-	-	-	-	-	-

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* Included in Statistical Group No.59 - Analysis 45.21

# See footnote on Analysis 45.17

Analysis 45.19 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Semiprocessed Material - 1932

RATING GROUP / STATISTICAL GROUP	PERCENTAGES OF ALL TRAFFIC			AVERAGES			REVENUES			VALUE
	REVENUE	TONS	EQUATED TON MILES	HAUL MILES	LOAD NET TONS	EQUATED TONS	TOTAL PER TON	TERMINAL PER EQUATED TON	LINE PER EQUATED TON-MILE	PER TON #
III SEMIPROCESSED MATERIAL	4.85%	3.96%	4.38%	360	24	45	$ 4.46	$ 78	$.00432	$ 53.77
30 Primary Metals	.44%	.57%	.46%	346	50	71	$ 2.81	$ .50	$.00416	$ 35.20
300 Iron and Steel - Ingots, Pigs	.21	.44	.15	153	53	74	1.73	.48	.00484	18.20
301 Copper - Ingot, Pig, Matte	.07	.03	.09	1181	43	64	8.39	.55	.00430	128.00
302 Lead and Zinc - Ingot, Pig, Slab	.15	.10	.21	953	42	63	5.83	.56	.00352	82.18
303 Aluminum - Ingot, Pig, Slab	.01	.00	.01	809	26	47	12.93	.74	.00801	444.67
309 Primary Metals, NOSH*										
31 Fibres	1.91%	1.01%	1.69%	421	13	34	$ 6.87	$1.04	$.00402	$119.84
310 Cotton (in bales)	.83	.41	.71	411	12	33	7.40	1.08	.00410	170.00
311 Wool	.21	.04	.15	851	13	34	17.82	1.05	.00694	540.32
312 Flax and Hemp	-	-	-	-	-	-	-	-	-	-
313 Hair and Moss	-	-	-	-	-	-	-	-	-	-
314 Jute	-	-	-	-	-	-	-	-	-	-
315 Cordage, Shoddy, Linters, Noils, etc.	.08	.04	.09	692	18	39	7.35	.91	.00367	49.34
316 Leaf Tobacco	.22	.10	.17	367	11	31	8.08	1.13	.00443	232.94
317 Hay, Alfalfa, Straw	.36	.25	.37	359	13	34	5.04	1.05	.00251	6.78
318 Vegetable Fibres, NOSH	.17	.13	.16	427	24	45	5.01	.79	.00453	12.64
319 Fibres, NOSH	.04	.04	.04	322	20	41	3.81	.87	.00319	28.04
32 Hides	.23%	.10%	.18%	593	23	43	$ 8.55	$ .82	$.00620	$195.85
320 Hides and Skins	.20	.08	.16	620	23	44	8.73	.81	.00615	195.85
329 Hides, NOSH	.03	.02	.02	457	21	41	7.64	.85	.00657	195.83
33 Rubber	.12%	.06%	.08%	552	34	54	$ 7.40	$ .65	$.00718	$108.67
330 Crude Rubber	.12	.06	.08	552	34	54	7.40	.65	.00718	108.67
339 Rubber, NOSH	-	-	-	-	-	-	-	-	-	-
34 Salt	.61%	.48%	.63%	483	29	49	$ 4.64	$ .71	$.00415	$ 6.22
(340 Salt, Rock)										
(341 Salt, Table (Common))										
(349 Salt, NOSH)	.61	.48	.63	483	29	49	4.64	.71	.00415	6.22
35 Ice	.07%	.24%	.04%	50	27	55	$ 1.15	$ .57	-	$ 4.37
350 Ice	.07	.24	.04	50	27	55	1.15	.27	-	4.37
359 Ice, NOSH	-	-	-	-	-	-	-	-	-	-
36 Primary Paper	.83%	.43%	.83%	662	25	45	$ 7.03	$ .78	$.00463	$ 69.22
360 Newsprint	.50	.26	.52	708	26	47	7.00	.76	.00449	31.44
361 Building Paper	-	-	-	-	-	-	-	-	-	-
362 Wrapping Paper and Paper Bags	.33	.17	.31	593	23	43	7.07	.82	.00486	127.00
363 Toilet and Tissue Paper*	-	-	-	-	-	-	-	-	-	-
364 Paper Boxes, Dishes, etc*	-	-	-	-	-	-	-	-	-	-
369 Primary Paper, NOSH*	-	-	-	-	-	-	-	-	-	-
37 Horticultural	.09%	.06%	.08%	427	24	45	$ 5.01	$ .79	$.00453	$101.24
(370 Trees, Shrubs, Vines)										
(371 Roots and Bulbs)										
(372 Plant Stock)	.09	.06	.08	427	24	45	5.01	.79	.00453	101.24
373 Insecticides*	-	-	-	-	-	-	-	-	-	-
374 Christmas Trees, Holly, etc.	-	-	-	-	-	-	-	-	-	-
375 Fresh Flowers and Plants	-	-	-	-	-	-	-	-	-	-
379 Horticultural, NOSH	-	-	-	-	-	-	-	-	-	-
38 Scrap	.55%	1.01%	.39%	153	41	62	$ 1.96	$ .57	$.00451	$ 5.80
380 Furnace Slag	.08	.33	.06	85	55	76	.89	.46	.00213	1.23
381 Iron and Teel	.30	.56	.19	141	42	63	1.96	.56	.00533	8.49
382 Nonferrous Scrap*	-	-	-	-	-	-	-	-	-	-
383 Excelsior, Sawdust, Shavings	-	-	-	-	-	-	-	-	-	-
384 Rags*	-	-	-	-	-	-	-	-	-	-
385 Vegetable	.09	.06	.08	427	24	45	5.01	.79	.00453	5.81
386 Forest Products, NOSH	.04	.04	.04	322	20	41	3.81	.87	.00319	5.81
389 Scrap, NOSH	.04	.02	.02	457	21	41	7.64	.85	.00657	5.81
39 Miscellaneous*	-	-	-	-	-	-	-	-	-	-

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* Included in Statistical Group No.59 - Analysis 45.21

See footnote on Analysis 45.17

Analysis 45.20 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Necessaries - 1932

RATING GROUP / STATISTICAL GROUP	PERCENTAGES OF ALL TRAFFIC			AVERAGES			REVENUES			VALUE
	REVENUE	TONS	EQUATED TON MILES	HAUL MILES	LOAD NET TONS	EQUATED TONS	TOTAL PER TON	TERMINAL PER EQUATED TON	LINE PER EQUATED TON-MILE	PER TON #
IV NECESSARIES	12.80%	5.56%	13.48%	682	20	42	$ 8.38	$ .83	$.00431	$103.61
IV NECESSARIES, EXCLUDING GROUP 44	10.99%	3.93%	10.73%	728	18	42	$10.17	$ .85	$.00480	$ -
40 Dry Vegetables	2.59%	.99%	2.61%	771	18	39	$ 9.46	$ .91	$.00454	$ 37.53
400 Dried Fruits	.21	.08	.19	834	27	47	9.33	.74	.00546	103.80
401 Potatoes (other than sweet)	1.42	.56	1.42	741	18	38	9.17	.92	.00454	23.40
402 Cabbage	.22	.06	.24	970	13	33	13.38	1.06	.00424	17.48
403 Onions	.20	.06	.25	1013	13	34	11.84	1.04	.00352	21.40
404 Beans and Peas, Dried	.25	.09	.24	888	25	45	9.57	.78	.00504	54.20
405 Peanuts	.11	.04	.10	715	16	36	10.74	.98	.00511	40.00
406 Nuts, NOSH	.09	.06	.08	427	24	45	5.01	.79	.00453	101.24
409 Dry Vegetables, NOSH	.09	.04	.09	689	13	34	9.91	1.04	.00420	21.42
41 Edible Liquids	.73%	.43%	.72%	594	29	52	$ 6.15	$ .67	$.00469	$ 82.77
410 Syrup and Molasses (Edible)	.14	.08	.15	716	30	50	6.67	.70	.00456	123.49
411 Molasses, Blackstrap, NOSH	.07	.07	.06	347	47	71	3.45	.50	.00519	15.30
412 Cottonseed Oil	.26	.14	.21	521	30	53	6.50	.67	.00566	90.00
413 Vegetable Oil, NOSH	.10	.05	.15	1076	29	50	7.21	.71	.00328	89.93
414 Fish Oil	.03	.01	.04	966	28	49	7.65	.73	.00382	48.52
415 Beverages	.10	.06	.09	433	21	48	6.21	.73	.00450	90.66
419 Edible Liquids, NOSH	.03	.02	.02	457	21	41	7.64	.85	.00657	80.92
42 Edible Animal Products	4.27%	.97%	4.43%	936	13	41	$16.09	$ .86	$.00464	$210.34
420 Fresh Meats and Fish	1.77	.43	2.00	918	12	40	15.09	.88	.00416	168.96
421 Dressed Poultry	.32	.05	.30	1232	12	39	25.80	.90	.00558	258.00
422 Eggs	.50	.07	.53	1353	12	39	24.92	.90	.00477	207.74
423 Butter, Margarine, Butterine	.56	.10	.46	924	13	40	20.11	.88	.00585	393.60
424 Cheese	.13	.03	.11	819	14	42	16.53	.84	.00589	242.00
425 Cured Animal Products	.37	.09	.42	1011	15	43	14.49	.82	.00432	198.67
429 Edible Animal Products, NOSH	.62	.20	.61	739	17	44	11.40	.80	.00474	197.19
43 Manufactured Foods	2.40%	1.17%	2.02%	608	27	47	$ 7.44	$ .75	$.00564	$ 98.60
430 Canned Vegetables	1.20	.52	1.05	678	23	44	8.47	.81	.00541	145.11
431 Sugar	1.11	.59	.89	567	31	51	6.80	.69	.00601	57.33
432 Coffee and Tea	-	-	-	-	-	-	-	-	-	-
433 Bakery Goods, Confectionery*	-	-	-	-	-	-	-	-	-	-
434 Candy, Chewing Gum*	-	-	-	-	-	-	-	-	-	-
439 Manufactured Foods, NOSH	.09	.06	.08	427	24	45	5.01	.79	.00453	101.24
44 Processed Cereals	1.81%	1.63%	2.75%	571	24	44	$ 4.05	$ .80	$.00240	$ 60.36
440 Wheat Flour	1.51	1.41	2.34	569	24	45	3.91	.79	.00235	53.84
441 Corn Meal	.03	.03	.05	456	20	41	2.79	.87	.00114	24.15
442 Packaged Cereals	.19	.12	.24	627	19	39	5.97	.90	.00310	142.26
449 Processed Cereals, NOSH	.08	.07	.12	567	22	42	4.18	.83	.00236	66.70
45 Furnishings	.66%	.25%	.66%	613	14	36	$ 9.85	$ .97	$.00432	$127.31
(450 Mattresses and Bed Springs										
(451 Domestic Furniture & Fixtures										
(452 Commercial Furniture & Fixtures	.30	.06	.31	775	8	34	18.14	1.05	.00437	238.19
453 Chinaware, Glassware, Pottery	.36	.19	.35	560	18	38	7.13	.92	.00427	92.30
459 Furnishings, NOSH*	-	-	-	-	-	-	-	-	-	-
46 Textiles and Leather	.34%	.12%	.29%	601	14	34	$10.40	$1.03	$.00515	$447.84
460 Cotton and Linen Fabrics	.17	.05	.16	650	10	31	12.87	1.16	.00471	540.00
461 Wool Fabrics*	-	-	-	-	-	-	-	-	-	-
462 Silk and Rayon Fabrics	-	-	-	-	-	-	-	-	-	-
(463 Canvas	-	-	-	-	-	-	-	-	-	-
(464 Yarns	-	-	-	-	-	-	-	-	-	-
465 Burlap, Bagging and Bags	.08	.03	.07	592	18	38	8.56	.92	.00517	114.00
466 Textiles, NOSH*	.03	.02	.02	457	21	41	7.64	.85	.00657	540.00
467 Leather	.06	.02	.04	617	18	38	9.85	.93	.00585	626.03
469 Leather Articles, NOSH*	-	-	-	-	-	-	-	-	-	-
47 Clothing	-	-	-	-	-	-	-	-	-	-
470 Men's, Women's and Children's Clothing*	-	-	-	-	-	-	-	-	-	-
471 Boots and Shoes*	-	-	-	-	-	-	-	-	-	-
472 Men's Furnishings*	-	-	-	-	-	-	-	-	-	-
473 Women's Accessories*	-	-	-	-	-	-	-	-	-	-
479 Clothing, NOSH*	-	-	-	-	-	-	-	-	-	-
49 Miscellaneous	-	-	-	-	-	-	-	-	-	-

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* Included in Statistical Group No.59 - Analysis 45.21

See footnote on Analysis 45.17

Analysis 45.21 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Auxiliaries - 1932

RATING GROUP STATISTICAL GROUP	PERCENTAGES OF ALL TRAFFIC REVENUE	PERCENTAGES OF ALL TRAFFIC TONS	PERCENTAGES OF ALL TRAFFIC EQUATED TON MILES	AVERAGES HAUL MILES	AVERAGES LOAD NET TONS	AVERAGES LOAD EQUATED TONS	REVENUES TOTAL PER TON	REVENUES TERMINAL PER EQUATED TON	REVENUES LINE PER EQUATED TON MILE	VALUE PER TON ‡
V AUXILIARIES	21.12%	14.71%	16.32%	373	26	47	$ 5.23	$ .74	$.00553	$ 97.55
50 Masonry	3.07%	3.33%	2.46%	275	32	52	$ 3.35	$ .67	$.00482	$ 13.26
500 Finished and Artificial Stone	.14	.10	.12	484	32	49	4.85	.71	.00512	48.21
501 Brick, Wall and Floor Tile	.42	.55	.39	279	37	57	2.70	.62	.00399	9.58
502 Composition Roofing	.27	.18	.23	421	22	43	5.55	.83	.00486	43.70
503 Cement	1.39	1.84	.86	196	39	59	2.76	.59	.00617	5.75
504 Plastering and Insulating Material	.29	.28	.32	395	24	44	3.79	.79	.00316	8.04
505 Wallboard	.37	.25	.37	459	21	42	5.35	.85	.00407	40.10
506 Building Glass	.07	.03	.05	621	29	49	8.21	.72	.00654	70.56
507 Tile: Pipe, Roofing & Products	.12	.10	.12	341	17	38	4.35	.93	.00308	12.31
509 Masonry, NOSH*	-	-	-	-	-	-	-	-	-	-
51 Power	.44%	5.82%	5.93%	351	28	52	$ 5.27	$ .68	$.00627	$ 26.84
510 Gasoline, in tanks	-	-	-	-	-	-	-	-	-	-
511 Kerosene, in tanks	-	-	-	-	-	-	-	-	-	-
512 Gasoline, in packages	-	-	-	-	-	-	-	-	-	-
513 Kerosene, in packages	-	-	-	-	-	-	-	-	-	-
514 Gas*	-	-	-	-	-	-	-	-	-	-
519 Power, NOSH	88.44	5.82	5.93	351	28	52	5.27	.68	.00627	26.84
52 Lubricants	.68%	.40%	.60%	487	22	43	$ 6.19	$ .83	$.00489	$ 76.57
520 Lubricants, in tanks	-	-	-	-	-	-	-	-	-	-
521 Packaged Liquid Lubricants	-	-	-	-	-	-	-	-	-	-
522 Packaged Greases	-	-	-	-	-	-	-	-	-	-
529 Lubricants, NOSH	.68	.40	.60	487	22	43	6.19	.83	.00489	76.57
53 Kindlers*	-	-	-	-	-	-	-	-	-	-
530 Matches*	-	-	-	-	-	-	-	-	-	-
531 Candles*	-	-	-	-	-	-	-	-	-	-
539 Kindlers, NOSH	-	-	-	-	-	-	-	-	-	-
54 Preservatives	.65%	.55%	.54%	357	31	53	$ 4.41	$ .67	$.00525	$ 34.68
540 Asphalt	.42	.42	.32	295	35	57	3.70	.62	.00559	10.50
541 Rosin	.06	.04	.07	540	20	40	5.40	.88	.00327	20.51
542 Turpentine	.02	.01	.02	1037	24	47	12.30	.75	.00521	108.94
543 Linseed Oil	.03	.02	.03	512	26	50	6.53	.71	.00536	175.39
544 Paints and Varnish	.08	.03	.06	639	23	43	8.71	.82	.00586	229.00
545 Tar, Wax	.04	.03	.04	418	25	45	5.23	.78	.00497	79.21
55 Chemicals, in tanks	.20%	.23%	.14%	220	41	64	$ 3.26	$ .55	$.00633	$ 31.88
550 Alcohol	.07	.04	.06	526	22	45	7.03	.78	.00491	109.66
551 Sulphuric Acid	.13	.19	.08	162	49	72	2.54	.49	.00757	15.50
552 Acids, NOSH*	-	-	-	-	-	-	-	-	-	-
559 Chemicals, in tanks, NOSH	-	-	-	-	-	-	-	-	-	-
56 Chemicals, Packaged	.03%	.02%	.02%	457	21	41	$ 7.64	$ .85	$.00657	$154.26
560 Alcohol	-	-	-	-	-	-	-	-	-	-
561 Sulphuric Acid	-	-	-	-	-	-	-	-	-	-
562 Acids, NOSH*	-	-	-	-	-	-	-	-	-	-
569 Chemicals, packaged, NOSH*	.03	.02	.02	457	21	41	7.64	.85	.00657	154.26
57 Cleansers & Adhesives	.21%	.16%	.23%	491	21	42	$ 7.36	$ .85	$.00587	$130.99
570 Soap	.28	.14	.21	495	21	42	7.33	.85	.00579	130.99
571 Cleaning Compounds	-	-	-	-	-	-	-	-	-	-
572 Cleansers, NOSH*	-	-	-	-	-	-	-	-	-	-
573 Starch*	-	-	-	-	-	-	-	-	-	-
574 Stearine*	-	-	-	-	-	-	-	-	-	-
575 Glue*	-	-	-	-	-	-	-	-	-	-
576 Liquid Cement*	-	-	-	-	-	-	-	-	-	-
579 Adhesives, NOSH*	.03	.02	.02	457	21	42	7.64	.85	.00657	130.99
58 Explosives	.11%	.02%	.04%	483	16	37	$18.30	$ .96	$.01479	$382.37
580 Ammunition	-	-	-	-	-	-	-	-	-	-
589 Explosives, NOSH	.11	.02	.04	483	16	37	18.30	.96	.01479	382.37
59 Miscellaneous ϕ	7.63%	4.18%	6.36%	474	20	41	$ 6.64	$ .87	$.00510	$274.13
590 Miscellaneous	7.63	4.18	6.36	474	20	41	6.64	.87	.00510	274.13

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* Included in Statistical Group No.59

ϕ Includes all "Manufactures and Miscellaneous, NOSH", I.C.C. Commodity Group No.701

‡ See footnote on Analysis 45.17

Analysis 45.22 Traffic Statistics and Unit Revenues (Total, Terminal and Line) of Accessories - 1932

RATING GROUP STATISTICAL GROUP	PERCENTAGES OF ALL TRAFFIC REVENUE	PERCENTAGES OF ALL TRAFFIC TONS	PERCENTAGES OF ALL TRAFFIC EQUATED TON MILES	AVERAGES HAUL MILES	AVERAGES LOAD NET TONS	AVERAGES LOAD EQUATED TONS	REVENUES TOTAL PER TON	REVENUES TERMINAL PER EQUATED TON	REVENUES LINE PER EQUATED TON-MILE	VALUE PER TON ‡
VI ACCESSORIES	5.68%	2.81%	4.17%	438	23	45	$ 7.35	$ .79	$.00623	$ 149.21
60 Ferrous Metal	2.70%	1.97%	1.84%	348	31	52	$ 5.01	$ .68	$.00654	$ 46.62
600 Bars, Sheets, Plates	-	-	-	-	-	-	-	-	-	-
601 Structural	1.86	1.52	1.22	307	32	53	4.49	.67	.00661	41.37
602 Forgings and Special Processes	-	-	-	-	-	-	-	-	-	-
603 Pipe and Fittings	.60	.29	.44	540	27	48	7.61	.73	.00659	69.62
604 Rails, Fastenings, Frogs, Switches	.06	.06	.05	336	40	61	3.76	.58	.00558	67.70
605 Wire, not woven	.18	.10	.13	422	24	45	6.19	.79	.00609	47.08
606 Nails	-	-	-	-	-	-	-	-	-	-
607 Articles*	-	-	-	-	-	-	-	-	-	-
609 Ferrous Metals, NOSH*	-	-	-	-	-	-	-	-	-	-
61 Nonferrous Metals	.03%	.02%	.02%	373	30	50	$ 5.39	$ .70	$.00666	$ 244.55
610 Copper - Bars, Sheets	.03	.02	.02	373	30	50	5.39	.70	.00666	244.55
611 Brass and Bronze - Bars, Sheets	-	-	-	-	-	-	-	-	-	-
612 Lead and Zinc - Sheets, Plates	-	-	-	-	-	-	-	-	-	-
613 Aluminum - Bars, Sheets, Plates*	-	-	-	-	-	-	-	-	-	-
614 Nonferrous Metals, Bars, Sheets, Plates, NOSH*	-	-	-	-	-	-	-	-	-	-
615 Pipe*	-	-	-	-	-	-	-	-	-	-
616 Wire*	-	-	-	-	-	-	-	-	-	-
617 Articles*	-	-	-	-	-	-	-	-	-	-
619 Nonferrous Metals, NOSH*	-	-	-	-	-	-	-	-	-	-
62 Rubber	.16%	.03%	.13%	912	13	34	$16.57	$1.04	$.00604	$ 690.00
620 Tires and Tubes	.16	.03	.13	912	13	34	16.57	1.04	.00604	690.00
621 Hose*	-	-	-	-	-	-	-	-	-	-
622 Articles, NOSH*	-	-	-	-	-	-	-	-	-	-
629 Rubber, NOSH*	-	-	-	-	-	-	-	-	-	-
63 Tools and Appliances*	-	-	-	-	-	-	-	-	-	-
630 Cutlery	-	-	-	-	-	-	-	-	-	-
631 Abrasives*	-	-	-	-	-	-	-	-	-	-
632 Hardware*	-	-	-	-	-	-	-	-	-	-
633 Tools, NOSH*	-	-	-	-	-	-	-	-	-	-
634 Domestic Washers, Ironers, Sweepers	-	-	-	-	-	-	-	-	-	-
635 Electric Appliances, NOSH*	-	-	-	-	-	-	-	-	-	-
639 Appliances, NOSH*	-	-	-	-	-	-	-	-	-	-
64 Machinery and Parts	.56%	.20%	.41%	588	18	39	$10.16	$ .91	$.00635	$ 622.46
640 Agricultural	.08	.03	.07	590	15	36	10.52	.98	.00573	246.50
641 Plumbing, Heating, Ventilating	-	-	-	-	-	-	-	-	-	-
642 Engine and Boiler	-	-	-	-	-	-	-	-	-	-
643 Elevators, Conveyors, etc.	-	-	-	-	-	-	-	-	-	-
649 Machinery and Parts, NOSH	.48	.17	.34	587	18	39	10.10	.90	.00647	688.80
65 Vehicles and Parts	1.75%	.37%	1.37%	698	11	35	$17.04	$1.02	$.00601	$ 343.19
650 Horsedrawn	.01	.00	.01	702	13	33	12.43	1.06	.00529	160.34
651 Saddlery and Harness*	-	-	-	-	-	-	-	-	-	-
652 Tractors and Autotrucks(Set Up)	.12	.03	.10	753	11	34	16.34	1.02	.00585	408.32
653 Automobiles, Trailers, etc.(Set Up)	.96	.11	.78	823	6	31	30.77	1.12	.00572	350.00
654 Automobiles and Autotrucks (Knocked Down)	.63	.21	.47	665	19	39	11.00	.90	.00651	355.60
655 Railroad	.03	.02	.02	281	28	50	4.60	.71	.00676	77.66
659 Vehicles and Parts, NOSH*	-	-	-	-	-	-	-	-	-	-
66 Stationery, Printing	.33%	.20%	.30%	519	23	44	$ 6.12	$ .81	$.00467	$ 76.40
660 Books and Printing Paper	.33	.20	.30	519	23	44	6.12	.81	.00467	76.40
669 Stationery and Printing, NOSH*	-	-	-	-	-	-	-	-	-	-
67 Personal	.15%	.02%	.10%	1259	18	39	$23.02	$ .91	$.00785	$1755.27
670 Drugs and Medicine*	-	-	-	-	-	-	-	-	-	-
671 Toilet Articles and Accessories*	-	-	-	-	-	-	-	-	-	-
672 Tobacco Manufactured Products	.10	.02	.10	1259	18	39	23.02	.91	.00785	1755.27
679 Personal, NOSH*	-	-	-	-	-	-	-	-	-	-
68 Amusement*	-	-	-	-	-	-	-	-	-	-
69 Miscellaneous*	-	-	-	-	-	-	-	-	-	-

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* Included in Statistical Group No.59 - Analysis 45.21

‡ See footnote on Analysis 45.17

Analysis 45.23 Unit Revenues (Terminal and Line) of Commodity Groups by Districts - 1932

RATING GROUP	AVERAGE TERMINAL REVENUE PER EQUATED TON					AVERAGE LINE REVENUE PER EQUATED TON-MILE				
COMMODITY GROUP	UNITED STATES	EASTERN	POCA-HONTAS	SOUTH-ERN	WEST-ERN	UNITED STATES	EASTERN	POCA-HONTAS	SOUTH-ERN	WESTERN
ALL GROUPS	$ .63	$.61	$ .43	$ .74	$ .91	$.00415	$.00448	$.00341	$.00410	$.00393
I ROUGH MATERIAL	$ .52	$.57	$ .48	$ .61	$ .70	$.00194	$.00329	$.00319	$.00187	$.00009
10 Sand, Stone, Gravel	.46	.52	.39	.51	.57	.00218	.00313	.00315	.00200	.00041
11 Timber	.70	.68	.61	.77	.87	.00202	.00379	.00324	.00164	.00055
12 Rough Vegetables	.44	.54	-	1.17	.69	-	-	-	.00337	-
19 Miscellaneous*	-	-	-	-	-	-	-	-	-	-
II RAW MATERIAL	$ .56	$.52	$ .39	$ .67	$ .90	$.00366	$.00398	$.00324	$.00350	$.00350
II RAW MATERIAL, Including Group 44	.57	.53	.39	.68	.90	.00361	.00394	.00324	.00348	.00339
20 Grain	.58	.50	.52	.66	.68	.00509	.00456	.00423	.00538	.00499
21 Animal Feeds	.81	.82	.70	.90	.95	.00220	.00309	.00249	.00245	.00137
22 Fresh Vegetables	.85	.76	.71	.89	1.01	.00383	.00321	.00513	.00479	.00380
23 Live Animals	1.15	1.01	1.00	1.20	1.39	.00332	.00364	.00367	.00408	.00269
24 Dry Fuels	.49	.43	.38	.51	.70	.00353	.00410	.00319	.00296	.00304
25 Crude Liquids	.61	.57	.55	.66	.74	.00447	.00703	.00617	.00529	.00369
26 Ores	.40	.46	.45	.61	.61	.00331	.00383	.00370	.00313	.00221
27 Lumber	.77	.72	.66	.80	.92	.00349	.00370	.00418	.00332	.00327
28 Fertilizer	.68	.66	.74	.70	.76	.00341	.00446	.00347	.00294	.00324
29 Miscellaneous*	-	-	-	-	-	-	-	-	-	-
III SEMIPROCESSED MATERIAL	$ .78	$.69	$ .77	$ .91	$ .99	$.00432	$.00481	$.00418	$.00380	$.00397
30 Primary Metals	.50	.49	.45	.50	.61	.00416	.00536	.00403	.00365	.00346
31 Fibres	1.04	.89	.89	1.04	1.22	.00402	.00402	.00384	.00376	.00404
32 Hides	.82	.74	.71	.85	.97	.00620	.00619	.00597	.00668	.00600
33 Rubber	.65	.55	.51	.71	.80	.00718	.00751	.00535	.00819	.00714
34 Salt	.71	.64	.64	.78	.86	.00415	.00380	.00410	.00374	.00432
35 Ice	.57	.55	.48	.72	.79	-	.00098	-	-	-
36 Primary Paper	.78	.70	.68	.84	.91	.00463	.00511	.00466	.00484	.00400
37 Horticultural	.79	.74	.69	.88	1.00	.00453	.00450	.00342	.00416	.00398
38 Scrap	.57	.58	.56	.64	.90	.00451	.00521	.00528	.00275	.00381
39 Miscellaneous*	-	-	-	-	-	-	-	-	-	-
IV NECESSARIES	$ .83	$.76	$ .76	$ .92	$ .97	$.00431	$.00447	$.00426	$.00476	$.00402
IV NECESSARIES, Excluding Group 44	.85	.77	.77	.92	.98	.00480	.00482	.00451	.00519	.00471
40 Dry Vegetables	.91	.82	.81	.99	1.07	.00454	.00513	.00436	.00524	.00408
41 Edible Liquids	.67	.63	.62	.71	.80	.00469	.00464	.00426	.00495	.00426
42 Edible Animal Products	.86	.78	.71	.88	1.02	.00464	.00461	.00479	.00521	.00455
43 Manufactured Foods	.75	.71	.68	.83	.82	.00564	.00553	.00411	.00548	.00588
44 Processed Cereals	.80	.69	.71	.93	.93	.00240	.00301	.00303	.00305	.00156
45 Furnishings	.97	.83	.89	1.14	1.20	.00432	.00415	.00480	.00517	.00489
46 Textiles and Leather	1.03	.89	.88	1.16	1.08	.00515	.00541	.00454	.00487	.00575
47 Clothing*	-	-	-	-	-	-	-	-	-	-
49 Miscellaneous*	-	-	-	-	-	-	-	-	-	-
V AUXILIARIES	$ .74	$.71	$ .66	$ .78	$ .88	$.00553	$.00566	$.00529	$.00614	$.00517
50 Masonry	.67	.64	.62	.75	.80	.00482	.00507	.00456	.00405	.00478
51 Power	.68	.61	.59	.71	.83	.00627	.00749	.00795	.00822	.00519
52 Lubricants	.83	.74	.75	.90	.99	.00489	.00546	.00519	.00506	.00424
53 Kindlers*	-	-	-	-	-	-	-	-	-	-
54 Preservatives	.67	.62	.57	.74	.79	.00525	.00578	.00539	.00456	.00508
55 Chemicals, in tanks	.55	.63	.50	.54	.75	.00633	.00753	.00688	.00519	.00540
56 Chemicals, packaged	.85	.80	.77	.97	1.00	.00657	.00672	.00542	.00588	.00606
57 Cleansers and Adhesives	.85	.77	.74	.89	1.00	.00587	.00570	.00414	.00544	.00627
58 Explosives	.96	.88	.88	.99	1.14	.01479	.01224	.01221	.01573	.01680
59 Miscellaneous#	.87	.77	.71	.89	1.02	.00510	.00514	.00478	.00557	.00531
VI ACCESSORIES	$ .79	$.77	$ .74	$ .91	$1.03	$.00623	$.00585	$.00601	$.00667	$.00688
60 Ferrous Metals	.68	.66	.63	.79	.78	.00654	.00640	.00600	.00556	.00682
61 Non-ferrous Metals	.70	.77	1.00	.85	.62	.00666	.00673	.00363	.00922	.00597
62 Rubber	1.04	.90	.91	1.13	1.17	.00604	.00575	.00565	.00777	.00714
63 Tools and Appliances	-	-	-	-	-	-	-	-	-	-
64 Machinery and Parts	.91	.84	.81	.96	1.09	.00635	.00495	.00503	.00727	.00801
65 Vehicles and Parts	1.02	.93	.93	1.04	1.25	.00601	.00542	.00552	.00741	.00686
66 Stationery. printing	.81	.70	.65	.85	.93	.00467	.00488	.00481	.00570	.00475
67 Personal	.91	.81	.78	.94	1.04	.00785	.00904	.00959	.00923	.00650
68 Amusement*	-	-	-	-	-	-	-	-	-	-
69 Miscellaneous*	-	-	-	-	-	-	-	-	-	-

* Included in No. 59.

# Includes all manufactures and miscellaneous I.C.C. Commodity Group No. 701.

Source: Analyses 45.17 to 45.22 inclusive.

Analysis 45.24 Traffic Statistics and Unit Revenue (Net Ton Mile) of Commodity Groups by Districts - 1932

COMMODITY GROUP	PERCENTAGES OF REVENUE				PERCENTAGES OF NET TON MILES				REVENUE PER NET TON MILE			
	EAST-ERN	POCA-HONTAS	SOUTH-ERN	WEST-ERN	EAST-ERN	POCA-HONTAS	SOUTH-ERN	WEST-ERN	EAST-ERN	POCA-HONTAS	SOUTH-ERN	WEST-ERN
ALL COMMODITIES	100%	100%	100%	100%	100%	100%	100%	100%	$.0106	$.0061	$.0106	$.0113
I ROUGH MATERIAL	1.90%	1.21%	4.14%	3.55%	1.74%	.74%	4.30%	3.77%	$.0116	$.0099	$.0102	$.0106
10 Sand, Stone, Gravel	1.39	.77	2.81	2.07	1.25	.46	2.86	2.12	.0118	.0103	.0104	.0110
11 Timber	.48	.43	1.33	1.11	.47	.28	1.45	1.34	.0109	.0094	.0097	.0094
12 Rough Vegetables	.03	-	-	.36	.02	-	.00	.31	.0192	-	-	.0133
19 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-
II RAW MATERIAL	50.69%	83.84%	52.50%	49.45%	62.67%	91.91%	64.21%	54.75%	$.0086	$.0056	$.0086	$.0102
II RAW MATERIAL Including Group 44	52.57%	84.41%	54.57%	51.33%	65.32%	92.35%	66.32%	58.28%	$.0086	$.0056	$.0087	$.0099
20 Grain	2.64	.83	4.14	9.60	3.04	.64	3.50	9.89	.0093	.0080	.0025	.0109
21 Animal Feeds	1.13	.36	1.73	1.33	1.49	.32	1.94	2.05	.0080	.0070	.0094	.0073
22 Fresh Vegetables	3.95	1.51	10.77	13.12	3.52	.58	6.90	11.96	.0119	.0161	.0165	.0124
23 Live Animals	2.18	.31	1.13	5.88	1.68	.11	.52	3.81	.0138	.0177	.0128	.0174
24 Dry Fuels	35.41	77.79	22.49	9.52	47.35	88.15	37.39	13.05	.0079	.0054	.0064	.0082
25 Crude Liquids	1.01	.11	.67	2.82	.55	.05	.50	3.52	.0195	.0148	.0142	.0090
26 Ores	1.93	.86	1.48	1.73	2.42	.68	2.27	2.46	.0085	.0078	.0069	.0080
27 Lumber	1.76	1.63	6.90	5.07	2.05	1.10	8.24	7.50	.0091	.0091	.0088	.0076
28 Fertilizer	.69	.43	3.18	.38	.59	.29	2.96	.52	.0024	.0091	.0114	.0082
29 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-
III SEMIPROCESSED MATERIAL	4.72%	1.77%	6.02%	5.21%	4.08%	.93%	5.07%	4.70%	$.0123	$.0117	$.0126	$.0125
30 Primary Metals	.52	.07	.30	.47	.50	.06	.43	.84	.0110	.0200	.0073	.0063
31 Fibres	.96	.93	3.85	2.54	.74	.42	2.54	1.58	.0138	.0135	.0160	.0182
32 Hides	.29	.05	.15	.23	.22	.02	.11	.18	.0144	.0137	.0146	.0144
33 Rubber	.27	.00	.01	.01	.21	.00	.01	.01	.0134	.0099	.0170	.0139
34 Salt	.54	.17	.58	.78	.64	.12	.77	.82	.0090	.0090	.0079	.0108
35 Ice	.08	.00	.05	.09	.04	.00	.02	.04	.0209	.0288	.0206	.0237
36 Primary Paper	1.13	.24	.51	.71	1.02	.13	.48	.90	.0117	.0111	.0112	.0090
37 Horticultural	.08	.04	.09	.11	.07	.03	.08	.09	.0114	.0073	.0117	.0125
38 Scrap	.85	.27	.49	.27	.63	.14	.63	.24	.0143	.0118	.0083	.0126
39 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-
IV NECESSARIES	13.11%	4.18%	12.75%	14.08%	10.71%	2.19%	9.44%	14.16%	$.0130	$.0117	$.0143	$.0112
IV NECESSARIES Excluding Group 44	11.22%	3.61%	10.68%	12.20%	8.05%	1.75%	7.33%	10.62%	$.0148	$.0127	$.0154	$.0129
40 Dry Vegetables	2.18	.83	2.52	3.39	1.61	.46	1.81	3.55	.0144	.0112	.0147	.0108
41 Edible Liquids	.52	.08	1.32	.90	.52	.05	1.28	1.03	.0106	.0094	.0110	.0099
42 Edible Animal Products	5.43	1.05	3.23	3.89	3.48	.40	1.84	2.45	.0166	.0161	.0186	.0179
43 Manufactured Foods	2.00	.71	1.78	3.37	1.66	.50	1.42	3.19	.0128	.0088	.0132	.0119
44 Processed Cereals	1.89	.57	2.07	1.88	2.66	.44	2.11	3.53	.0075	.0079	.0104	.0060
45 Furnishings	.82	.77	.70	.46	.61	.26	.34	.29	.0142	.0182	.0218	.0180
46 Textiles and Leather	.29	.17	1.12	.18	.17	.08	.64	.13	.0176	.0129	.0185	.0158
47 Clothing*	-	-	-	-	-	-	-	-	-	-	-	-
49 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-
V AUXILIARIES	21.92%	6.96%	20.81%	22.99%	15.80%	3.39%	14.68%	19.62%	$.0147	$.0126	$.0150	$.0132
50 Masonry	3.59	1.39	3.13	2.76	3.05	.78	3.19	2.48	.0125	.0109	.0104	.0125
51 Power	5.49	1.59	9.74	12.63	3.08	.50	5.28	11.02	.0189	.0195	.0195	.0129
52 Lubricants	.72	.14	.47	.80	.54	.07	.38	.79	.0142	.0131	.0130	.0114
53 Kindlers*	-	-	-	-	-	-	-	-	-	-	-	-
54 Preservatives	.77	.25	1.01	.50	.59	.14	.98	.50	.0139	.0114	.0109	.0112
55 Chemicals, in tanks	.24	.15	.35	.14	.13	.06	.38	.10	.0189	.0145	.0099	.0147
56 Chemicals, packaged	.04	.00	.02	.04	.03	.00	.01	.03	.0182	.0133	.0158	.0152
57 Cleansers and Adhesives	.37	.07	.29	.30	.26	.04	.23	.22	.0153	.0101	.0135	.0154
58 Explosives	.10	.07	.08	.14	.03	.01	.02	.04	.0338	.0341	.0393	.0423
59 Miscellaneous	10.61	3.30	5.72	5.69	8.10	1.79	4.21	4.44	.0139	.0113	.0144	.0144
VI ACCESSORIES	7.66%	2.05%	3.78%	4.72%	5.00%	.83%	2.29%	3.01%	$.0163	$.0151	$.0174	$.0177
60 Ferrous Metals	4.12	.93	1.43	1.84	2.93	.44	1.20	1.50	.0149	.0129	.0126	.0138
61 Non-ferrous Metals	.04	.00	.00	.03	.03	.00	.00	.03	.0172	.0185	.0191	.0113
62 Rubber	.18	.03	.10	.17	.11	.01	.04	.11	.0175	.0163	.0240	.0183
63 Tools and Appliances	-	-	-	-	-	-	-	-	-	-	-	-
64 Machinery and Parts	.60	.15	.46	.62	.43	.06	.25	.34	.0149	.0140	.0196	.0206
65 Vehicles and Parts	2.09	.44	1.24	1.76	.96	.12	.49	.76	.0231	.0235	.0267	.0260
66 Stationery, printing	.55	.20	.14	.16	.50	.12	.11	.15	.0118	.0106	.0135	.0116
67 Personal	.07	.30	.40	.14	.03	.08	.20	.11	.0221	.0223	.0214	.0139
68 Amusement*	-	-	-	-	-	-	-	-	-	-	-	-
69 Miscellaneous*	-	-	-	-	-	-	-	-	-	-	-	-

* Included in No. 59.

SECTION 46. SUGGESTED CLASSIFICATION

Analysis 46.1 Result of Highway Liberal Classification Provisions

BUSINESS GROUPS	TONS REPORTED BY SHIPPERS: ALL SHIPPERS # TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT	SHIPPERS USING HIGHWAY ON ACCOUNT LIBERAL MIXTURES ø TOTAL TONNAGE (000)	HIGHWAYS TONNAGE (000)	PER CENT
ALL GROUPS	290,203	16,275	6%	31,774	4,207	13%
I ROUGH MATERIAL*	12,350	1,683	14%	342	106	31%
34 Sand, Stone, Gravel	12,060	1,670	14	342	106	31
8b Timber	290	14	5	-	-	-
II RAW MATERIAL*	67,284	1,950	3%	852	133	16%
10a Grain	3,068	3	$	-	-	-
16 Fresh Fruits and Vegetables	2,436	482	20	52	8	15
22 Livestock and Poultry	832	476	57	11	3	27
12 Coal, Coke and Fuel	45,165	539	1	493	12	2
26 Ores and Concentrates	8,463	48	1	-	-	-
8c Lumber	6,833	318	5	279	99	35
03 Barrels, Cooperage Material	487	93	19	16	13	76
III SEMI-PROCESSED MATERIAL*	12,748	1,314	10%	2,377	239	10%
13 Cotton, Cotton Linters	1,259	185	15	20	18	89
29 Paper, Paper Products	11,439	1,123	10	2,357	221	9
35 Horticultural Material	50	5	10	-	-	-
IV NECESSARIES*	50,748	3,869	8%	9,747	1,289	13%
04 Beverages and Liquors	1,063	339	32	252	121	48
36 Sugar, Syrups and Molasses	9,679	648	7	6	2	25
39 Vegetable Oil, Meal and Cake	1,360	213	16	8	5	64
27 Packing House Products	7,534	494	7	6,837	424	6
02 Bakery Goods, Confectionery	1,486	258	17	1,145	199	17
09 Canned Goods	2,342	299	13	498	38	8
18 Groceries	2,362	544	23	487	364	75
10b Cereals, Flour, Mill Products	18,401	406	2	99	15	15
17 Furniture and Furnishings	606	66	11	377	114	30
31 Porcelain, China, etc.	152	6	4	-	-	-
21 Leather and Leather Goods	927	77	8	2	1	53
37 Textiles	4,166	433	10	36	5	14
07 Boots and Shoes	506	50	10	-	-	-
15 Dry Goods, Clothing	163	37	23	1	/	26
V AUXILIARIES*	98,280	4,192	4%	12,222	1,498	12%
8a Masonry Materials (except wood)	17,756	830	5	838	445	53
30 Petroleum, Crude and Refined	37,422	1,249	3	7,575	372	5
28 Paints, Varnishes and Gums	197	36	18	21	1	7
11 Chemicals	6,807	322	5	813	102	13
40 Miscellaneous Commodities	36,098	1,755	5	2,976	577	19
VI ACCESSORIES*	48,793	3,258	7%	6,234	942	15%
19 Iron and Steel, Structural	11,363	226	2	39	10	26
20 Iron and Steel Articles	19,935	998	5	1,112	110	10
24 Metals, Non-ferrour	1,921	216	11	212	58	27
33 Rubber, Rubber Articles, Tires	1,584	213	13	544	43	8
23 Machinery, Vehicles, etc.	4,974	205	4	233	23	10
32 Plumbing and Heating Supplies	529	21	4	19	6	33
01 Automotive Vehicles and Parts	6,331	1,253	20	3,836	661	17
05 Boats, Marine Equipment	154	1	1	-	-	-
06 Books and Periodicals	821	55	7	195	23	12
14 Department Store Merchandise	466	37	8	40	7	18
38 Tobacco, Tobacco Products	710	32	5	5	/	5
25 Musical Instruments and Supplies	5	/	3	-	-	-

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# As reported by respondents to Shippers' Inquiry.

ø As reported by respondents to Shippers' Inquiry.

/ Less than 500 tons.

$ Less than ½%.

SECTION 49. COMMODITY LEVEL

Analysis 49.1 Shippers' Comparisons of Charges, Classified by Commodities*

BUSINESS GROUPS	AVERAGE HAUL MILES	AVERAGE LOAD TONS HIGHWAY	AVERAGE LOAD TONS RAILWAY	TRANSPORT CHARGES# PER NET TON HIGHWAY	TRANSPORT CHARGES# PER NET TON RAILWAY	TRANSPORT CHARGES# PER NET TON MILE HIGHWAY	TRANSPORT CHARGES# PER NET TON MILE RAILWAY	TOTAL CHARGESø PER TON MILE HIGHWAY	TOTAL CHARGESø PER TON MILE RAILWAY
ALL GROUPS	221	8	17	$6.56	$7.89	$ .030	$ .036	$ .035	$ .044
I ROUGH MATERIAL*	73	7	50	$1.45	$1.10	$ .020	$ .015	$ .029	$ .046
34 Sand, Stone, Gravel	73	7	50	1.45	1.10	.020	.015	.029	.046
8b Timber	-	-	-	-	-	-	-	-	-
II RAW MATERIAL*	206	7	20	$5.11	$6.49	$ .025	$ .032	$ .026	$ .036
10a Grain	226	7	17	5.86	7.25	.026	.032	.026	.032
16 Fresh Fruits and Vegetables	281	7	16	6.04	8.12	.021	.029	.045	.083
22 Livestock and Poultry	500	5	8	5.00	8.10	.010	.016	.010	.019
12 Coal, Coke and Fuel	59	7	44	1.42	1.35	.024	.023	.024	.031
26 Ores and Concentrates	150	6	6	6.17	10.00	.041	.067	.041	.067
8c Lumber	124	6	22	4.13	4.98	.033	.040	.035	.045
03 Barrels, Cooperage Material	155	6	11	6.91	7.29	.045	.047	.062	.075
III SEMIPROCESSED MATERIAL*	195	7	15	$4.90	$6.65	$ .025	$ .034	$ .028	$ .040
13 Cotton, Cotton Linters	217	5	17	2.23	6.45	.010	.030	.020	.043
29 Paper, Paper Products	190	8	15	5.63	6.71	.030	.035	.040	.055
35 Horticultural Material	-	-	-	-	-	-	-	-	-
IV NECESSARIES*	249	7	14	$7.02	$8.59	$ .028	$ .035	$ .038	$ .046
04 Beverages and Liquors	600	8	23	6.37	9.96	.019	.029	.019	.032
36 Sugar, Syrups and Molasses	124	7	26	3.74	3.70	.030	.030	.030	.038
39 Vegetable Oil, Meal and Cake	117	5	20	2.99	3.49	.025	.030	.042	.037
27 Packing House Products	342	9	11	8.17	10.84	.024	.032	.049	.063
02 Bakery Goods, Confectionery	234	8	14	7.16	7.89	.031	.034	.061	.071
09 Canned Goods	235	8	16	5.33	6.20	.023	.026	.025	.033
18 Groceries	224	6	14	6.10	8.61	.027	.038	.030	.045
10b Cereals, Flour, Mill Products	111	6	16	3.23	4.47	.029	.040	.031	.045
17 Furniture and Furnishings	270	6	9	13.50	10.45	.050	.039	.063	.079
31 Porcelain, China, etc.	205	9	11	6.69	8.65	.033	.042	.058	.076
21 Leather and Leather Goods	188	7	12	7.45	8.97	.040	.048	.051	.059
37 Textiles	316	7	8	11.68	12.72	.037	.040	.061	.070
07 Boots and Shoes	440	6	13	12.78	13.96	.029	.032	.029	.041
15 Dry Goods, Clothing	300	7	8	10.68	14.45	.036	.048	.056	.075
V AUXILIARIES*	190	8	20	$5.28	$6.10	$ .028	$ .032	$ .030	$ .036
8a Masonry Materials(except wood)	81	9	28	2.48	2.60	.031	.032	.034	.041
30 Petroleum, Crude and Refined	150	9	19	4.68	5.94	.031	.040	.031	.048
28 Paints, Varnishes and Gums	343	7	15	4.46	8.07	.013	.024	.016	.031
11 Chemicals	262	7	13	8.23	9.78	.031	.037	.038	.052
40 Miscellaneous Commodities	264	8	15	7.42	8.30	.028	.031	.039	.048
VI ACCESSORIES*	238	7	15	$8.24	$9.71	$ .035	$ .041	$ .040	$ .050
19 Iron and Steel, Structural	125	8	21	4.06	4.54	.033	.036	.037	.051
20 Iron and Steel Articles	196	8	19	6.15	6.76	.031	.034	.049	.064
24 Metals, Nonferrous	155	7	18	6.52	7.33	.042	.047	.081	.089
33 Rubber, Rubber Articles, Tires	561	7	15	13.59	15.88	.024	.028	.028	.036
23 Machinery, Vehicles, etc.	224	7	11	8.54	8.96	.038	.040	.059	.070
32 Plumbing and Heating Supplies	203	8	17	7.39	8.95	.036	.044	.060	.076
01 Automotive, Vehicle and Parts	274	7	11	9.37	11.66	.034	.043	.036	.047
05 Boats, Marine Equipment	-	-	-	-	-	-	-	-	-
06 Books and Periodicals	341	8	10	8.79	13.20	.026	.039	.047	.064
14 Department Store Merchandise	360	8	20	9.40	10.10	.026	.028	.092	.098
38 Tobacco, Tobacco Products	137	7	12	8.09	10.00	.059	.073	.059	.087
25 Musical Instruments & Supplies	-	-	-	-	-	-	-	-	-

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

# Tariff - drayage and packing omitted.

ø Includes drayage and packing, if any.

Analysis 49.2 Shippers' Comparison of Transport Charges Classified by Length of Haul*

MILEAGE RANGE		COMMODITY GROUP	AVERAGE HAUL	AVERAGE LOAD TONS		TRANSPORT CHARGES# PER NET TON		TRANSPORT CHARGES# PER NET TON MILE	
OVER	UNDER		MILES	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY
1	50	All Groups	31	8	24	$ 2.11	$ 2.54	$ .068	$ .082
		I Rough Material	20	6	52	1.07	.93	.054	.046
		II Raw Material	31	6	31	1.59	2.12	.051	.068
		III Semiprocessed Material	34	7	19	2.38	2.97	.070	.087
		IV Necessaries	34	6	17	2.37	3.16	.071	.094
		V Auxiliaries	30	9	25	1.81	2.16	.061	.073
		VI Accessories	34	8	20	2.95	3.25	.086	.095
51	100	All Groups	80	8	17	$ 3.92	$ 4.82	$ .049	$ .060
		I Rough Material	80	9	35	3.00	3.50	.038	.044
		II Raw Material	73	6	21	3.09	3.48	.042	.047
		III Semiprocessed Material	81	7	16	4.11	4.67	.051	.058
		IV Necessaries	82	7	14	3.75	5.06	.046	.062
		V Auxiliaries	77	10	22	3.30	3.89	.043	.050
		VI Accessories	81	8	16	4.63	5.06	.057	.062
101	200	All Groups	155	8	15	$ 6.56	$ 6.70	$ .042	$ .043
		I Rough Material	-	-	-	-	-	-	-
		II Raw Material	153	7	14	5.28	5.97	.034	.039
		III Semiprocessed Material	149	7	15	4.97	5.62	.033	.038
		IV Necessaries	159	8	13	5.94	7.05	.037	.044
		V Auxiliaries	152	8	19	5.32	5.68	.035	.037
		VI Accessories	157	7	13	8.98	7.65	.057	.049
201	300	All Groups	258	7	14	$ 8.47	$ 11.86	$ .033	$ .046
		I Rough Material	-	-	-	-	-	-	-
		II Raw Material	253	7	13	7.08	7.58	.028	.030
		III Semiprocessed Material	251	8	15	5.90	7.22	.024	.029
		IV Necessaries	257	7	13	7.92	9.49	.031	.037
		V Auxiliaries	258	8	15	7.11	7.60	.028	.029
		VI Accessories	262	7	14	8.49	9.25	.032	.035
301	500	All Groups	393	8	15	$ 9.78	$ 11.51	$ .025	$ .029
		I Rough Material	-	-	-	-	-	-	-
		II Raw Material	401	8	14	7.80	9.87	.019	.025
		III Semiprocessed Material	384	7	14	9.32	11.11	.024	.029
		IV Necessaries	395	8	14	8.99	11.21	.023	.028
		V Auxiliaries	398	7	15	10.33	10.70	.026	.027
		VI Accessories	389	8	18	10.74	12.85	.028	.033
501 and over		All Groups	773	7	13	$ 17.25	$ 18.96	$ .022	$ .025
		I Rough Material	-	-	-	-	-	-	-
		II Raw Material	815	6	21	15.33	21.08	.019	.026
		III Semiprocessed Material	630	7	11	13.00	16.25	.021	.026
		IV Necessaries	804	8	11	18.26	18.89	.023	.023
		V Auxiliaries	770	7	14	16.85	17.61	.022	.023
		VI Accessories	754	7	12	17.59	20.28	.023	.027

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* From returns to Shippers' Inquiry.
# Tariff only - drayage, etc. omitted.

Analysis 49.3 Shippers' Comparison of Transport Charges Classified by Size of Load*

AVERAGE LOAD TONS		AVERAGE HAUL	TRANSPORT CHARGES # PER NET TON		TRANSPORT CHARGES # PER NET TON MILE	
HIGHWAY	RAILWAY	MILES	HIGHWAY	RAILWAY	HIGHWAY	RAILWAY
4	20	176	$5.06	$5.79	$.029	$.033
5	13	197	7.38	8.52	.037	.043
6	17	214	7.15	8.25	.033	.038
7	18	262	7.15	8.75	.027	.033
8	17	265	7.42	9.00	.028	.034
9	21	222	6.58	6.95	.030	.031
10	18	277	7.49	7.57	.027	.027
11	19	316	7.48	9.29	.024	.029
12	25	162	4.87	4.90	.030	.030
13	22	176	5.06	5.06	.029	.029
14	27	95	2.72	3.33	.029	.035
15	18	202	5.13	5.76	.025	.029
17	31	185	4.00	5.30	.022	.029
18	25	117	2.65	2.91	.023	.025
19	28	87	1.55	1.97	.018	.023
20	26	185	5.11	4.77	.028	.026

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* From returns to Shippers' Inquiry.
# Tariff - Drayage omitted.

Analysis 49.4 Unit Revenues of Rail, Water and Pipe Carriers

CARRIER AND TERRITORY	REVENUES (000)	REVENUE TON MILES# (millions)	AVERAGE HAUL# (miles)	AVERAGE REVENUE PER TON MILE#
RAIL - UNITED STATES	$ 2,442,881*	235,638	365	$ .0104
WATER - UNITED STATES	$ 119,584	37,082	785	$ .0032
PIPE - UNITED STATES	$ 211,789	31,511	380	$ .0067
RAILWAYS				
Eastern	$ 1,053,331*	113,428	396	$ .0093
Southern	473,963*	47,318	295	.0100
Western	915,587*	74,892	376	.0122
WATERWAYS				
Common Carriers - Carlot	$ 102,410	18,135	966	$ .0056
Atlantic Coast	24,767	1,764	377	.0140
Atlantic Gulf	13,299	2,714	1,187	.0049
Intercoastal	38,946	10,001	2,553	.0039
Inland Waters	8,571	1,481	646	.0058
Great Lakes	7,404	1,144	382	.0065
Pacific Coast	9,420	1,028	396	.0092
Other Carriers - Cargo	17,174	18,947	666	.0009
Atlantic Coast	3,278	2,143	636	.0015
Atlantic Gulf	1,227	859	1,657	.0014
Intercoastal	183	136	2,847	.0013
Inland Waterways	1,010	349	597	.0029
Great Lakes	11,099	15,391	648	.0007
Pacific Coast	377	66	409	.0057
PIPE LINES ¢				
Crude Petroleum	$ 200,266	30,130	377	$ .0066
North Atlantic	6,314	797	433	.0080
Great Lakes - Southwest	89,671	19,891	856	.0045
Southwest - Gulf	104,281	9,442	172	.0110
Gasoline	11,522	1,381	489	.0083
North Atlantic	2,995	261	267	.0115
Great Lakes - Southwest	8,527	1,120	607	.0076
Southwest - Gulf	-	-	-	-

# For water lines the rail distances are used in computing ton miles, for purposes of Comparisons with Railways.

* Freight Only.

¢ Two Southwest - Gulf companies did not segregate revenues and ton mileages. As the proportion of refined to crude was only 5% the entire revenue tons and ton miles were included in crude.

Analysis 49.5 Motor Truck Basic Costs#

AVERAGE GROSS WEIGHT THROUGHOUT ANNUAL MILEAGE-POUNDS

RATED CAPACITY POUNDS	NUMBER OF TRUCKS	AVERAGE GROSS WEIGHT	RATED CAPACITY POUNDS	NUMBER OF TRUCKS	AVERAGE GROSS WEIGHT	RATED CAPACITY POUNDS	NUMBER OF TRUCKS	AVERAGE GROSS WEIGHT	RATED CAPACITY POUNDS	NUMBER OF TRUCKS	AVERAGE GROSS WEIGHT
500	6	1,821	6,500	54	13,622	14,500	5	24,130	25,300	142	37,141
1,000	554	3,717	7,000	302	14,843	15,000	274	24,517	26,000	1	37,000
1,500	188	4,467	7,200	78	12,320	16,000	123	27,580	27,000	5	45,342
2,000	957	5,992	7,500	22	19,338	17,500	12	25,250	28,000	4	39,564
2,500	3,266	6,634	8,000	834	15,803	18,000	19	22,430	28,500	43	51,500
3,000	3,200	6,998	9,000	93	16,392	20,000	144	33,588	30,000	116	52,826
3,500	273	7,083	9,500	88	19,725	21,000	2	29,918	34,000	8	43,000
4,000	3,616	9,518	10,000	1,211	19,759	22,000	9	37,318	35,000	35	48,200
4,500	119	8,778	11,000	242	19,449	22,500	1	29,632	36,000	39	47,800
4,750	64	11,777	12,000	106	18,815	22,750	1	28,450	44,000	2	57,425
5,000	641	12,560	13,000	508	19,272	24,000	20	30,517	56,000	8	64,975
6,000	1,030	14,644	14,000	63	22,558	25,000	4	33,668	Total	18,532	trucks

AVERAGE GROSS WEIGHT GROUPING-THOUSANDS OF POUNDS

ITEM - PER TRUCK	Under 5	5-10	10-15	15-20	20-25	25 & Over
ANNUAL MILEAGE, FOR HIRE TRUCKS	13,504	20,138	23,240	22,683	35,410	36,995
Number of Trucks	33	443	383	303	200	326
Average Gross Weight	3,584	7,250	12,192	17,646	21,000	40,310
ANNUAL MILEAGE, PRIVATE TRUCKS	18,115	12,806	14,864	17,686	20,279	32,503
Number of Trucks	1,026	9,382	2,683	2,445	452	577
Average Gross Weight	3,834	7,230	11,731	17,181	22,321	35,027
AVERAGE LOAD, IN % OF RATED CAPACITY	50.6	64.3	71.4	60.0	77.0	86.0
Number of Trucks	1,057	9,893	3,236	2,712	645	918
Average Gross Weight	3,817	7,181	11,377	17,685	22,207	36,481
GASOLINE CONSUMPTION, GALLONS PER MILE	.09497	.13827	.16922	.22663	.26718	.33730
Number of Trucks	1,038	9,557	3,226	2,705	720	617
Average Gross Weight	3,814	7,266	11,445	17,690	23,614	39,670
OIL CONSUMPTION, QUARTS PER MILE	.01055	.01769	.02101	.01889	.02337	.02810
Number of Trucks	995	6,073	2,062	2,318	597	647
Average Gross Weight	3,814	7,325	11,702	17,799	22,223	34,073
TIRE COST, CENTS PER MILE	1.3236	.6123	.6770	1.2074	1.2065	1.6563
Number of Trucks	813	8,291	2,499	2,283	441	501
Average Gross Weight	3,767	7,181	11,149	17,687	22,216	35,142
VEHICLE MAINTENANCE, CENTS PER MILE	1.0221	1.9172	2.2473	3.1106	2.5264	2.6668
Number of Trucks	900	8,128	2,528	2,348	454	702
Average Gross Weight	3,855	7,205	11,143	17,800	22,212	38,107
GARAGE MISCELLANEOUS, DOLLARS PER YEAR	75.69	110.11	120.04	166.20	133.42	186.30
Number of Trucks	610	3,656	1,190	665	156	362
Average Gross Weight	3,892	6,864	10,936	17,001	22,633	40,464
VEHICLE DEPRECIATION, CENTS PER MILE	1.1319	2.3682	2.7477	3.1976	2.6449	3.9432
Number of Trucks	685	8,229	2,578	3,342	434	761
Average Gross Weight	3,935	7,172	11,136	17,787	22,250	37,900
DRIVER'S WAGES, ALL TRUCKS, CENTS PER MILE ¢	5.016	8.283	8.651	7.190	6.463	5.840
Number of Trucks	559	5,567	2,556	1,484	402	626
Average Gross Weight	3,922	6,926	11,087	17,607	21,922	36,028
TAXES AND FEES, DOLLARS PER YEAR*	39.96	48.56	86.74	170.40	191.80	331.14
Number of Trucks	582	7,508	2,441	1,952	366	585
Average Gross Weight	3,987	7,194	11,043	17,660	21,940	36,268
GARAGE RENT, DOLLARS PER·YEAR	105.93	100.43	144.96	171.08	160.69	140.55
Number of Trucks	545	1,197	701	869	285	339
Average Gross Weight	3,728	6,795	12,398	18,231	21,741	36,860
VEHICLE INSURANCE, ALL TRUCKS, DOLLARS PER YEAR	88.87	77.78	201.71	201.96	306.75	227.41
Number of Trucks	947	7,404	2,019	1,808	448	723
Average Gross Weight	3,790	7,307	11,306	17,539	21,865	37,878
GENERAL OVERHEAD, FOR HIRE TRUCKS, DOLLARS PER YEAR	472	796	874	1,405	678	1,578
Number of Trucks	14	212	270	162	116	163
Average Gross Weight	3,887	7,301	12,250	17,128	22,131	39,871
GENERAL OVERHEAD, PRIVATE TRUCKS, DOLLARS PER YEAR	588	130	537	368	286	1,158
Number of Trucks	248	2,415	608	910	218	313
Average Gross Weight	4,150	8,148	12,617	17,755	21,949	36,849

¢ 1,028 For Hire Trucks at 5.9996 cents. 10,166 Private Trucks at 7.951 cents.

* Excluding gasoline and oil taxes.

# Based on Group Averages from Truck Questionnaire.

Analysis 49.6 Highway Basic Unit Costs

ITEM		TRUCK CAPACITY IN TONS (OF 2,000 POUNDS)							
	RATED	1	2	3	5	7.5	10	15	20
	øACTUAL	1.4	2.7	3.9	6.2	8.9	11.5	16.4	21
	*OCCUPIED	0.6	1.4	2.2	3.6	5.3	7.0	10.3	13.4
AVERAGE MOTOR TRUCK OPERATING COSTS**									
VARIABLE		CENTS PER MILE							
Fuel, less tax		1.31	1.87	2.31	3.01	3.70	4.30	5.30	6.15
Oil, less tax		.19	.24	.28	.34	.39	.44	.51	.56
Tires and tubes		.52	.84	1.11	1.58	2.09	2.55	3.37	4.11
Maintenance, Labor		1.16	1.16	1.16	1.16	1.16	1.16	1.16	1.16
Maintenance, Materials		.43	.94	1.31	1.88	2.42	2.87	3.59	4.17
Garage Miscellaneous, Labor		.49	.49	.49	.49	.49	.49	.49	.49
Garage Miscellaneous, Materials		.23	.23	.23	.23	.23	.23	.23	.23
Vehicle Depreciation		1.67	2.17	2.54	3.09	3.60	4.02	4.70	5.24
Driver's Wages, for hire		6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Driver's Wages, private		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Helper's Wages		.11	.19	.26	.38	.52	.65	.88	1.10
Fuel Tax (State, Federal, Local)		.48	.69	.85	1.11	1.37	1.59	1.96	2.28
Oil Tax (Federal)		.03	.06	.09	.14	.20	.27	.39	.50
Variable License Fees, for hire /		.01	.02	.02	.03	.03	.03	.04	.04
Total Variable Costs, for hire		12.63	14.91	16.65	19.44	22.22	24.59	28.61	32.03
Total Variable Costs, private		14.60	16.85	18.56	21.29	24.02	26.32	30.22	33.53
FIXED COSTS		DOLLARS PER YEAR							
Garage Rent		$ 110	$ 126	$ 136	$ 150	$ 162	$ 171	$ 185	$ 195
Vehicle Insurance, for hire		180	263	329	435	544	636	795	931
Vehicle Insurance, private		135	197	247	326	408	477	596	698
Interest on Vehicle Investment		32	56	77	116	161	202	279	351
General Overhead, Payroll, for hire		478	622	727	885	1,033	1,153	1,346	1,502
General Overhead, Payroll, Private		254	330	386	470	549	612	715	798
General Overhead, Other, for hire		119	156	182	221	258	288	336	376
General Overhead, Other, Private		63	83	97	117	137	153	179	200
Net General Overhead, for hire //		352	428	473	522	547	551	528	478
Licenses and Taxes, fixed		29	58	88	150	231	315	492	676
Total Fixed Costs, for hire		948	1,281	1,539	1,958	2,388	2,766	3,432	4,031
Total Fixed Costs, private		623	850	1,031	1,330	1,647	1,931	2,446	2,918
Net Fixed Costs, for hire //		703	931	1,103	1,374	1,645	1,876	2,260	2,631
MISCELLANEOUS AVERAGE STATISTICS**									
Gross Weight, throughout Annual Mileage, lbs.		5,571	9,467	12,909	19,096	26,027	32,426	44,226	55,112
Vehicle Weight, tons		2.16	3.34	4.31	5.95	7.67	9.19	11.85	14.20
Load carried, % of rated capacity		62.2%	69.5%	71.4%	72.0%	71.2%	70.3%	68.4%	66.9%
Load carried, % of mfr's allowance		44.7%	51.6%	54.5%	57.9%	59.9%	61.0%	62.7%	63.7%
Annual Mileage, for hire trucks		17,200	21,266	24,073	28,157	31,870	34,797	39,399	43,019
Annual Mileage, private trucks		12,159	15,035	17,019	19,906	22,531	24,600	27,854	30,413
Variable Costs, % of Total, for hire		69.6%	71.2%	72.3%	73.7%	74.8%	75.6%	76.7%	77.4%
Variable Costs, % of Total, private		74.0%	74.9%	73.4%	76.1%	76.7%	77.0%	77.5%	77.8%
Gasoline Consumption, Miles per gallon		9.6	6.7	5.4	4.2	3.4	3.1	2.4	2.0
Oil Consumption, miles per quart		71.7	56.6	47.9	39.7	34.2	30.8	26.5	23.9
Tire Price, Retail List		$ 138	$ 254	$ 363	$ 570	$ 814	$ 1,048	$1,498	$1,929
Vehicle Price, less tires		$1,078	$1,870	$ 2,582	$3,881	$ 5,356	$ 6,731	$9,294	$11,685
Vehicle Life, Miles (000)		65	86	102	126	149	167	198	223
Vehicle Life, years, for hire		3.8	4.1	4.2	4.5	4.7	4.8	5.0	5.2
Vehicle Life, years, private		5.3	5.7	6.0	6.3	6.6	6.8	7.1	7.3
Road Franchise & License Taxes % of operating costs for hire #		3.3%	4.4%	5.1%	6.1%	7.0%	7.7%	8.8%	9.6%
Road and License Taxes % of operating costs, private		3.1%	4.0%	4.7%	5.7%	6.0%	7.3%	8.4%	9.2%

ø Maximum load which can safely be carried habitually; i.e., manufacturer's allowable load.
* Average load throughout annual mileage.
/ Of extremely rare application to private trucks.
//Exculding pickup and delivery, platform, etc., not pertinent to rail carload comparisons.
Including federal gasoline and oil taxes which though not levied for road purposes do not accrue save through road use.
**Unless otherwise specified figures apply to for hire and private trucks alike.

Analysis 49.7 Mileage Scale of Highway Unit Costs

ZONE	MILES	TONS CARRIED*													
		3	5	7-1/2	10	15	20	25	30	35	40	45	50	55	60
		AVERAGE COST PER NET TON CARRIED													
TERMINAL	15	$ 0.88	$ 0.63	$ 0.49	$ 0.41	$ 0.33	$ 0.28	$ 0.35	$ 0.33	$ 0.30	$ 0.28	$ 0.32	$ 0.31	$ 0.29	$ 0.28
1	60	4.12	2.93	2.27	1.91	1.52	1.29	1.62	1.50	1.39	1.29	1.48	1.42	1.35	1.29
2	120	7.36	5.23	4.05	3.41	2.70	2.30	2.89	2.68	2.47	2.30	2.63	2.53	2.41	2.30
3	180	10.60	7.53	5.83	4.90	3.89	3.32	4.16	3.85	3.56	3.32	3.79	3.64	3.47	3.32
4	240	13.84	9.83	7.61	6.40	5.08	4.33	5.43	5.03	4.65	4.33	4.94	4.75	4.53	4.33
5	300	17.08	12.13	9.39	7.90	6.26	5.34	6.70	6.20	5.74	5.34	6.10	5.86	5.59	5.34
6	360	$ 20.32	$ 14.43	$11.18	$ 9.40	$ 7.45	$ 6.35	$ 7.97	$ 7.38	$ 6.82	$ 6.35	$ 7.25	$ 6.97	$ 6.65	$ 6.35
7	420	23.56	16.73	12.96	10.89	8.63	7.37	9.24	8.55	7.91	7.37	8.41	8.08	7.71	7.37
8	480	26.80	19.03	14.74	12.39	9.82	8.38	10.51	9.72	9.00	8.38	9.56	9.19	8.77	8.38
9	540	30.04	21.33	16.52	13.89	11.01	9.39	11.78	10.90	10.08	9.39	10.72	10.30	9.83	9.39
10	600	33.28	23.63	18.30	15.39	12.19	10.40	13.05	12.07	11.17	10.40	11.87	11.40	10.89	10.40
11	660	$ 36.52	$ 25.93	$20.08	$16.89	$13.38	$11.42	$14.32	$13.25	$12.26	$11.42	$13.03	$12.51	$11.95	$11.42
12	720	39.76	28.23	21.86	18.38	14.57	12.43	15.59	14.42	13.34	12.43	14.19	13.62	13.01	12.43
13	780	43.00	30.53	23.64	19.88	15.75	13.44	16.86	15.59	14.43	13.44	15.34	14.73	14.07	13.44
14	840	46.24	32.83	25.42	21.38	16.94	14.45	18.13	16.77	15.52	14.45	16.50	15.84	15.13	14.45
15	900	49.48	35.13	27.20	22.88	18.12	15.47	19.40	17.94	16.60	15.47	17.65	16.95	16.19	15.47
16	960	$ 52.72	$ 37.43	$28.99	$24.37	$19.31	$16.48	$20.67	$19.12	$17.69	$16.48	$18.81	$18.06	$17.25	$16.48
17	1020	55.96	39.73	30.77	25.87	20.50	17.49	21.94	20.29	18.78	17.49	19.97	19.17	18.31	17.49
18	1080	59.20	42.03	32.55	27.37	21.68	18.50	23.21	21.47	19.87	18.50	21.12	20.28	19.37	18.50
19	1140	62.44	44.33	34.33	28.87	22.87	19.52	24.48	22.64	20.95	19.52	22.28	21.39	20.43	19.52
20	1200	65.68	46.63	36.11	30.37	24.06	20.53	25.75	23.81	22.04	20.53	23.43	22.50	21.49	20.53
21	1260	$ 68.92	$ 48.93	$37.89	$31.86	$25.24	$21.54	$27.02	$24.99	$23.13	$21.54	$24.59	$23.61	$22.55	$21.54
22	1320	72.16	51.23	39.67	33.36	26.43	22.55	28.29	26.16	24.21	22.55	25.74	24.72	23.61	22.55
23	1380	75.40	53.53	41.45	34.86	27.61	23.57	29.56	27.34	25.30	23.57	26.90	25.83	24.67	23.57
24	1440	78.64	55.83	43.23	36.36	28.80	24.58	30.83	28.51	26.39	24.58	28.05	26.94	25.73	24.58
25	1500	81.87	58.13	45.01	37.85	29.99	25.59	32.10	29.68	27.47	25.59	29.21	28.05	26.79	25.59
26	1560	$ 85.11	$ 60.43	$46.80	$39.35	$31.17	$26.60	$33.37	$30.86	$28.56	$26.60	$30.37	$29.16	$27.85	$26.60
27	1620	88.35	62.74	48.58	40.85	32.36	27.62	34.64	32.03	29.65	27.62	31.52	30.27	28.91	27.62
28	1680	91.59	65.04	50.36	42.35	33.55	28.63	35.91	33.21	30.74	28.63	32.68	31.38	29.97	28.63
29	1740	94.83	67.34	52.14	43.85	34.73	29.64	37.18	34.38	31.82	29.64	33.83	32.49	31.03	29.64
30	1800	98.07	69.64	53.92	45.34	35.92	30.65	38.45	35.56	32.91	30.65	34.99	33.59	32.09	30.65
31	1860	$ 101.31	$ 71.94	$55.70	$46.84	$37.11	$31.67	$39.72	$36.73	$34.00	$31.67	$36.14	$34.70	$33.15	$31.67
32	1920	104.55	74.24	57.48	48.34	38.29	32.68	40.99	37.90	35.08	32.68	37.30	35.81	34.21	32.68
33	1980	107.79	76.54	59.26	49.84	39.48	33.69	42.26	39.08	36.17	33.69	38.45	36.92	35.27	33.69
34	2040	111.03	78.84	61.04	51.34	40.66	34.70	43.53	40.25	37.26	34.70	39.61	38.03	36.33	34.70
35	2100	114.27	81.14	62.82	52.83	41.85	35.72	44.80	41.43	38.34	35.72	40.77	39.14	37.39	35.72
36	2160	$ 117.51	$ 83.44	$64.61	$54.33	$43.04	$36.73	$46.07	$42.60	$39.43	$36.73	$41.92	$40.25	$38.45	$36.73
37	2220	120.75	85.74	66.39	55.83	44.22	37.74	47.34	43.78	40.52	37.74	43.08	41.36	39.51	37.74
38	2280	123.99	88.04	68.17	57.33	45.41	38.75	48.61	44.95	41.61	38.75	44.23	42.47	40.57	38.75
39	2340	127.23	90.34	69.95	58.82	46.60	39.77	49.88	46.12	42.69	39.77	45.39	43.58	41.63	39.77
40	2400	130.47	92.64	71.73	60.32	47.78	40.78	51.15	47.30	43.78	40.78	46.54	44.69	42.69	40.78
41	2460	$ 133.71	$ 94.94	$73.51	$61.82	$48.97	$41.79	$52.42	$48.47	$44.87	$41.79	$47.70	$45.80	$43.75	$41.79
42	2520	136.95	97.24	75.29	63.32	50.15	42.80	53.69	49.65	45.95	42.80	48.86	46.91	44.81	42.80
43	2580	140.19	99.54	77.07	64.82	51.34	43.82	54.96	50.82	47.04	43.82	50.01	48.02	45.87	43.82
44	2640	143.43	101.84	78.85	66.31	52.53	44.83	56.23	51.99	48.13	44.83	51.17	49.13	46.93	44.83
45	2700	146.67	104.14	80.63	67.81	53.71	45.84	57.50	53.17	49.21	45.84	52.32	50.24	47.99	45.84
46	2760	$ 149.91	$106.44	$82.42	$69.31	$54.90	$46.85	$58.77	$54.34	$50.30	$46.85	$53.48	$51.35	$49.05	$46.85
47	2820	153.15	108.74	84.20	70.81	56.09	47.87	60.04	55.52	51.39	47.87	54.63	52.46	50.11	47.87
48	2880	156.39	111.04	85.98	72.30	57.27	48.88	61.31	56.69	52.48	48.88	55.79	53.57	51.17	48.88
49	2940	159.63	113.34	87.76	73.80	58.46	49.89	62.58	57.87	53.56	49.89	56.94	54.68	52.23	49.89
50	3000	162.87	115.64	89.54	75.30	59.64	50.90	63.85	59.04	54.65	50.90	58.10	55.78	53.28	50.90

Note: Costs shown above are for fully loaded truck movements. To adjust costs for empty haul increase the costs shown by the percentage of empty haul to loaded haul. The terminal cost with allowance of 15 mile haul is for two terminals.
Source: Highway cost statistics, Analysis 49.5
* Loaded hauls (Manufacturers allowable load).

SECTION 49. COMMODITY LEVEL

Analysis 49.8 Synthetic Scales of 1932 Rail Charges per Car for Transportation or Rough and Raw Material Traffics

CHARGES IN DOLLARS PER CAR

RATING GROUP NO.		10	11	20	21	22	23	24	25	26	27	28
COMMODITY		SAND, STONE, GRAVEL	TIMBER	GRAIN	ANIMAL FEEDS	FRESH VEGE-TABLES	LIVE ANIMALS	DRY FUELS	CRUDE LIQUIDS	ORES	LUMBER	FERTI-LIZER
AVERAGE LOAD, NET TONS		55	32	40	23	14	11	51	34	53	25	31
ZONE	MILES											
Terminal	15.	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35
1	60	45✓*	41*✓	54*	41*	45	41	51*✓	51*	50✓*	45*	46*✓
2	120	55	48	72✓	47✓	54*	47*	66	66✓	64	54✓	57
3	180	65	54	91	52	64	54	81	81	79	64	67
4	240	75	60	109	58✓	73✓	60✓	96	97	94	74	78
5.	300	85	66	127	64	83	66	112	112	108	83	88
6	360	$ 95	$ 72	$ 146	$ 70	$ 92	$ 72	$ 127	$ 128	$ 123	$ 93	$ 99
7	420	105	78	164	75	102	78	142	143	137	102	110
8	480	115	84	183	81	111	84	158	158	152	112	120
9	540	125	90	201	87	121	90	173	174	167	122	131
10	600	135	97	219	92	130	96	188	189	181	131	142
11	660	$ 145	$ 103	$ 238	$ 98	$ 140	$ 102	$ 204	$ 205	$ 196	$ 141	$ 152
12	720	155	109	256	104	149	108	219	220	211	150	163
13	780	165	115	275	110	159	114	234	236	225	160	173
14	840	175	121	293	115	168	120	250	251	240	170	184
15	900	185	127	312	121	178	127	265	266	254	179	195
16	960	$ 194	$ 133	$ 330	$ 127	$ 187	$ 133	$ 280	$ 282	$ 269	$ 189	$ 205
17	1020	204	140	348	132	197	139	295	297	284	198	216
18	1080	214	146	367	138	206	145	311	313	298	208	226
19	1140	224	151	385	144	216	151	326	328	313	217	237
20	1200	234	158	404	150	225	157	341	343	327	227	248
21	1260	$ 244	$ 164	$ 422	$ 155	$ 234	$ 163	$ 357	$ 359	$ 342	$ 237	$ 258
22	1320	254	170	440	161	244	169	372	374	357	246	269
23	1380	264	176	459	167	253	175	387	390	371	256	280
24	1440	274	182	477	172	263	181	403	405	386	265	290
25	1500	284	189	496	178	272	187	418	420	400	275	301
26	1560	$ 294	$ 195	$ 514	$ 184	$ 282	$ 193	$ 433	$ 436	$ 415	$ 285	$ 311
27	1620	304	201	533	190	291	200	449	451	430	294	322
28	1680	314	207	551	195	301	206	464	467	444	304	333
29	1740	324	213	569	201	310	212	479	482	459	313	343
30	1800	334	219	588	207	320	218	494	497	473	323	354
31	1860	$ 344	$ 225	$ 606	$ 212	$ 329	$ 224	$ 510	$ 513	$ 488	$ 333	$ 365
32	1920	354	232	625	218	339	230	525	528	503	342	375
33	1980	364	238	643	224	348	236	540	544	517	352	386
34	2040	374	244	662	230	358	242	556	559	532	361	396
35	2100	384	250	680	235	367	248	571	574	546	371	407
36	2160	$ 393	$ 256	$ 698	$ 241	$ 377	$ 254	$ 586	$ 590	$ 561	$ 380	$ 418
37	2220	403	262	717	247	386	260	602	605	576	390	428
38	2280	413	268	735	252	396	267	617	621	590	400	439
39	2340	423	274	754	258	405	273	632	636	605	409	450
40	2400	433	281	772	264	415	279	648	651	619	419	460
41	2460	$ 443	$ 287	$ 790	$ 270	$ 424	$ 285	$ 663	$ 667	$ 634	$ 428	$ 471
42	2520	453	293	809	275	434	291	678	682	649	438	481
43	2580	463	299	827	281	443	297	693	698	663	448	492
44	2640	473	305	846	287	453	303	709	713	678	457	502
45	2700	483	311	864	292	462	309	724	728	692	467	513
46	2760	$ 493	$ 317	$ 883	$ 298	$ 472	$ 315	$ 739	$ 744	$ 707	$ 476	$ 524
47	2820	503	324	901	304	481	321	755	759	722	486	535
48	2880	513	330	919	310	491	327	770	775	736	496	545
49	2940	523	336	938	315	500	333	785	790	751	505	556
50	3000	533	342	956	321	510	340	801	805	765	515	566

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* Point at which rail charge becomes less than highway cost, allowing 65% empty haul via highway.

✓ Point at which rail charge becomes less than highway cost, allowing no empty haul via highway.

SECTION 49. COMMODITY LEVEL

Analysis 49.9 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Semi-processed Material Traffics

CHARGES IN DOLLARS PER CAR

RATING GROUP NO.		30	31	32	33	34	36	37	38
COMMODITY		PRIMARY METALS	FIBRES	HIDES	RUBBER	SALT	PRIMARY PAPER	HORTI-CULTURAL	SCRAP
AVERAGE LOAD, NET TONS		50	13	23	34	29	25	24	41
ZONE	MILES								
Terminal	15	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35
1	60	53*✓	43	51	59*	48*	48*	47*	52*✓
2	120	74	52*	67*	82✓	60✓	60✓	60✓	69
3	180	88	60	84✓	106	72	73	72	86
4	240	106	68✓	100	129	85	85	84	102
5	300	124	76	116	152	97	98	96	119
6	360	$ 141	$ 84	$ 132	$ 176	$ 109	$ 110	$ 108	$ 136
7	420	159	93	148	199	122	123	120	152
8	480	177	101	164	223	134	136	133	169
9	540	194	109	180	246	146	148	145	186
10	600	212	117	196	269	158	161	157	203
11	660	$ 230	$ 125	$ 212	$ 293	$ 171	$ 173	$ 169	$ 219
12	720	247	133	228	316	183	186	181	236
13	780	265	142	244	340	195	198	193	253
14	840	283	150	261	363	208	211	206	270
15	900	300	158	277	386	220	223	218	286
16	960	$ 318	$ 166	$ 293	$ 410	$ 232	$ 236	$ 230	$ 303
17	1020	336	175	309	433	245	248	242	320
18	1080	353	183	325	457	257	261	254	337
19	1140	371	191	341	481	269	273	266	353
20	1200	389	199	357	504	282	286	279	370
21	1260	$ 406	$ 207	$ 373	$ 527	$ 294	$ 298	$ 291	$ 386
22	1320	424	215	389	550	306	311	303	404
23	1380	442	224	405	574	319	323	315	420
24	1440	459	232	421	597	331	336	327	437
25	1500	477	240	437	621	343	349	339	454
26	1560	$ 495	$ 248	$ 454	$ 644	$ 356	$ 361	$ 352	$ 471
27	1620	512	256	470	667	368	374	364	487
28	1680	530	265	486	691	380	386	376	504
29	1740	548	273	502	714	393	399	388	521
30	1800	565	281	518	738	405	411	400	538
31	1860	$ 583	$ 289	$ 534	$ 761	$ 417	$ 424	$ 412	$ 554
32	1920	601	297	550	785	430	436	425	571
33	1980	618	306	566	808	442	449	437	588
34	2040	636	314	582	831	454	461	449	605
35	2100	654	322	598	855	466	474	461	621
36	2160	$ 671	$ 330	$ 614	$ 878	$ 479	$ 486	$ 473	$ 638
37	2220	689	338	631	902	491	499	485	655
38	2280	707	347	647	925	503	511	498	672
39	2340	724	355	663	948	516	524	510	688
40	2400	742	363	679	972	528	537	522	705
41	2460	$ 760	$ 371	$ 695	$ 995	$ 540	$ 549	$ 534	$ 722
42	2520	777	379	711	1,019	552	562	546	739
43	2580	795	387	727	1,042	565	574	559	755
44	2640	813	396	743	1,065	577	587	571	772
45	2700	830	404	759	1,089	590	599	583	789
46	2760	$ 848	$ 412	$ 775	$ 1,112	$ 602	$ 612	$ 595	$ 806
47	2820	866	420	791	1,136	614	624	607	822
48	2880	884	428	808	1,159	627	636	619	839
49	2940	901	437	824	1,183	639	649	632	856
50	3000	919	445	840	1,206	651	662	644	873

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* Point at which rail charge becomes less than highway cost, allowing 65% empty haul via highway.

✓ Point at which rail charge becomes less than highway cost, allowing no empty haul via highway.

SECTION 49. COMMODITY LEVEL

Analysis 49.10 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Necessaries Traffics

CHARGES IN DOLLARS PER CAR

RATING GROUP NO.		40	41	42	43	44	45	46
COMMODITY		DRY VEGETABLES	EDIBLE LIQUIDS	EDIBLE ANIMAL PRODUCTS	MANU-FACTURED FOODS	PROCESSED CEREALS	FURNISH-INGS	TEXTILES AND LEATHER
AVERAGE LOAD, NET TONS		18	29	13	27	24	14	14
ZONE	MILES							
Terminal	15	$ 35	$ 35	$ 35	$ 35	$ 35	35	$ 35
1	60	46	50*	47	51*	42*	45	46
2	120	56*	65/	58*	67/	48/	54*	56*
3	180	67	79	69	83	54	64	67
4	240	77/	94	81	99	61	73/	78
5	300	88	109	92	115	67	82	88/
6	360	$ 98	$ 124	$ 103/	$ 131	$ 73	$ 92	$ 99
7	420	109	138	115	147	80	101	109
8	480	119	153	126	163	86	111	120
9	540	130	168	138	178	92	120	130
10	600	140	183	149	194	99	130	141
11	660	$ 151	$ 197	$ 160	$ 210	$ 105	$ 139	$ 152
12	720	161	212	172	226	111	149	162
13	780	172	227	183	242	118	158	173
14	840	182	242	194	258	124	167	183
15	900	193	256	206	274	131	177	194
16	960	$ 203	$ 271	$ 217	$ 290	$ 137	$ 186	$ 205
17	1020	204	286	229	306	143	196	215
18	1080	224	301	240	322	150	205	226
19	1140	235	315	251	338	156	215	236
20	1200	245	330	263	353	162	224	247
21	1260	$ 256	$ 345	$ 274	$ 369	$ 169	$ 234	$ 257
22	1320	266	360	285	385	175	243	268
23	1380	277	374	297	401	181	252	279
24	1440	287	389	308	417	188	262	289
25	1500	298	404	319	433	194	271	300
26	1560	$ 308	$ 418	$ 331	$ 449	$ 200	$ 281	$ 310
27	1620	319	433	342	465	207	290	321
28	1680	329	448	354	481	213	300	332
29	1740	340	463	365	497	219	309	342
30	1800	350	477	376	513	226	319	353
31	1860	$ 361	$ 492	$ 388	$ 529	$ 232	$ 328	$ 363
32	1920	371	507	399	544	238	337	374
33	1980	382	522	410	560	245	347	384
34	2040	392	536	422	576	251	356	395
35	2100	403	551	433	592	257	366	406
36	2160	$ 413	$ 566	$ 444	$ 608	$ 264	$ 375	$ 416
37	2220	429	581	456	624	270	385	427
38	2280	434	595	467	640	277	394	437
39	2340	445	610	479	656	283	404	448
40	2400	455	625	490	672	289	413	458
41	2460	$ 466	$ 640	$ 501	$ 688	$ 296	$ 422	$ 469
42	2520	476	654	513	704	302	432	480
43	2580	487	669	524	719	308	441	490
44	2640	497	684	535	735	315	451	501
45	2700	508	699	547	751	321	460	511
46	2760	$ 518	$ 713	$ 558	$ 767	$ 327	$ 470	$ 522
47	2820	529	728	570	783	334	479	533
48	2880	539	743	581	799	340	489	543
49	2940	550	758	592	815	346	498	554
50	3000	560	772	604	831	353	507	564

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* Point at which rail charge becomes less than highway cost, allowing 65% empty haul via highway.
/ Point at which rail charge becomes less than highway cost, allowing no empty haul via highway.

SECTION 49. COMMODITY LEVEL

Analysis 49.11 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Auxiliaries Traffics

CHARGES IN DOLLARS PER CAR

RATING GROUP NO.		50	51	52	54	55	56	57	58	59
COMMODITY		MASONRY	POWER	LUBRI-CANTS	PRE-SERVA-TIVES	CHEMI-CALS IN TANKS	CHEMI-CALS PACK-AGED	CLEANS-ERS AND AD-HESIVES	EXPLO-SIVES	MIS-CELL-ANEOUS
AVERAGE LOAD, NET TONS		32	28	22	31	41	21	21	16	20
ZONE	MILES									
Terminal	15	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35
1	60	50*	55*	48	52*	60*	52	50	68	48
2	120	66/	74/	60*	68/	84/	68*	65*	101	60*
3	180	81	94	73/	85	108	84	79	133	73
4	240	96	113	85	102	133	101	94/	166	85/
5	300	111	133	98	118	157	117/	108	199	98
6	360	$ 126	$ 152	$ 110	$ 135	$ 181	$ 133	$ 123	$ 231	$ 110
7	420	141	171	123	152	206	150	138	264	122
8	480	156	191	135	168	230	166	152	296	135
9	540	172	210	148	185	254	182	167	330	147
10	600	187	230	160	201	279	199	182	362	160
11	660	$ 202	$ 249	$ 173	$ 218	$ 303	$ 215	$ 196	$ 394	$ 172
12	720	217	269	185	235	327	231	211	427	185
13	780	232	288	198	251	352	248	226	460	198
14	840	247	308	210	268	376	264	240	492	210
15	900	263	327	223	284	400	280	255	525	222
16	960	$ 278	$ 347	$ 235	$ 301	$ 425	$ 297	$ 269	$ 558	$ 234
17	1020	293	366	248	318	449	313	284	590	247
18	1080	308	386	260	334	473	329	299	623	259
19	1140	323	405	273	351	498	346	313	656	272
20	1200	338	424	285	367	522	362	328	688	284
21	1260	$ 353	$ 444	$ 298	$ 384	$ 546	$ 378	$ 343	$ 721	$ 297
22	1320	369	463	310	401	571	395	357	754	309
23	1380	384	483	323	417	595	411	372	786	322
24	1440	399	502	335	434	619	427	386	819	334
25	1500	414	522	348	450	644	444	401	851	346
26	1560	$ 429	$ 541	$ 360	$ 467	$ 668	$ 460	$ 416	$ 884	$ 359
27	1620	444	561	373	484	692	476	430	917	371
28	1680	459	580	385	500	717	493	445	949	384
29	1740	475	600	398	517	741	509	460	982	396
30	1800	490	619	410	533	765	525	474	1,015	409
31	1860	$ 505	$ 639	$ 423	$ 550	$ 790	$ 542	$ 489	$1,047	$ 421
32	1920	520	658	435	567	814	558	504	1,080	434
33	1980	535	677	448	583	838	574	518	1,113	446
34	2040	550	697	460	600	863	591	533	1,145	459
35	2100	566	716	473	617	887	607	547	1,178	471
36	2160	$ 581	$ 736	$ 485	$ 633	$ 911	$ 623	$ 562	$1,211	$ 484
37	2220	596	755	498	650	936	640	577	1,243	496
38	2280	611	775	510	666	960	656	591	1,276	508
39	2340	626	794	523	683	984	672	606	1,309	521
40	2400	641	814	535	700	1,009	681	621	1,341	533
41	2460	$ 656	$ 833	$ 548	$ 716	$ 1,033	$ 705	$ 635	$1,374	$ 546
42	2520	672	853	560	733	1,057	721	650	1,406	558
43	2580	687	872	573	749	1,082	738	665	1,439	571
44	2640	702	892	585	766	1,106	754	679	1,472	582
45	2700	717	911	598	783	1,130	770	694	1,504	595
46	2760	$ 732	$ 930	$ 610	$ 799	$ 1,155	$ 787	$ 708	$1,537	$ 608
47	2820	747	950	623	816	1,179	803	723	1,570	620
48	2880	763	969	635	832	1,203	819	738	1,602	633
49	2940	778	989	648	849	1,228	836	752	1,635	645
50	3000	793	1,008	660	866	1,252	852	767	1,668	658

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* Point at which rail charge becomes less than highway cost, allowing 65% empty haul via highway.
/ Point at which rail charge becomes less than highway cost, allowing no empty haul via highway.

For Group 58 Rail Charge is always greater than highway cost.

Analysis 49.12 Synthetic Scales of 1932 Rail Charges per Car for Transportation of Accessories Traffic

CHARGES IN DOLLARS PER CAR

RATING GROUP NO.		60	61	62	64	65	66	67
COMMODITY		FERROUS METAL	NON-FERROUS METALS	RUBBER	MACHINERY AND PARTS	VEHICLES AND PARTS	STATIONERY, PRINTING	PERSONAL
AVERAGE LOAD, NET TONS		31	30	13	18	11	23	18
ZONE	MILES							
Terminal	15	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35
1	60	56*	55*	48	50	48	47*	53
2	120	76/	75/	60*	65*	60	60/	72*
3	180	96	95	72	80	73*	72	90
4	240	116	115	84	94	85	84	108
5	300	137	135	97	109	98	96	126
6	360	$ 157	$ 155	$ 109	$ 124	$ 110	$ 108	$ 144
7	420	177	176	121/	138/	123	121	163
8	480	197	196	134	153	135	133	181
9	540	218	216	146	168	148	145	199
10	600	238	236	158	183	160/	157	217
11	660	$ 258	$ 256	$ 170	$ 197	$ 173	$ 169	$ 235
12	720	278	276	183	212	185	182	254
13	780	299	296	195	227	198	194	272
14	840	319	316	207	242	210	206	290
15	900	339	336	219	256	222	218	308
16	960	$ 359	$ 356	$ 232	$ 271	$ 235	$ 230	$ 326
17	1020	380	376	244	286	247	243	344
18	1080	400	396	256	301	260	255	363
19	1140	420	416	269	315	272	267	381
20	1200	440	436	281	330	285	279	399
21	1260	$ 461	$ 456	$ 293	$ 345	$ 297	$ 291	$ 417
22	1320	481	476	305	359	310	304	435
23	1380	501	496	318	374	322	316	454
24	1440	521	516	330	389	335	328	472/
25	1500	542	536	342	404	347	340	490
26	1560	$ 562	$ 556	$ 355	$ 418	$ 360	$ 352	$ 508
27	1620	582	576	367	433	372	365	526
28	1680	603	596	379	448	385	377	545
29	1740	623	616	391	463	397	389	563
30	1800	642	636	404	477	410	401	581
31	1860	$ 663	$ 656	$ 416	$ 492	$ 422	$ 413	$ 599
32	1920	684	676	428	507	435	425	617
33	1980	704	696	441	522	447	438	636
34	2040	724	716	453	536	460	450	654
35	2100	744	737	465	551	472	462	672
36	2160	$ 765	$ 757	$ 477	$ 566	$ 485	$ 474	$ 690
37	2220	785	777	490	581	497	486	708
38	2280	805	797	502	595	510	499	726
39	2340	825	817	514	610	522	511	745
40	2400	846	837	527	625	534	523	763
41	2460	$ 866	$ 857	$ 539	$ 639	$ 547	$ 535	$ 781
42	2520	886	877	551	654	559	547	799
43	2580	906	897	563	669	572	560	817
44	2640	927	917	576	684	584	572	836
45	2700	947	937	588	698	597	584	854
46	2760	$ 967	$ 957	$ 600	$ 713	$ 609	$ 596	$ 872
47	2820	987	977	613	728	622	608	890
48	2880	1,008	997	625	743	634	621	908
49	2940	1,028	1,017	637	757	647	633	927
50	3000	1,048	1,037	649	772	659	645	945

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* Point at which rail charge becomes less than highway cost, allowing 65% empty haul via highway.
/ Point at which rail charge becomes less than highway cost, allowing no empty haul via highway.

Analysis 49.13 Synthetic Scale of 1932 Rail Charges per Car of Eleven Most Important Individual Commodity Groups#

CHARGES IN DOLLARS PER CAR

STATISTICAL GROUP NUMBER		241	519	590	240	271	200	220	229	601	420	440
STATISTICAL COMMODITY		BITUMINOUS COAL	GASOLINE ETC.	MISCELLANEOUS MANUFACTURES	ANTHRACITE COAL	LUMBER	WHEAT	CITRUS FRUITS	FRESH VEGETABLES	STRUCTURAL MATERIAL	FRESH MEAT	WHEAT FLOUR
PER CENT OF REVENUE PRODUCED		22%	9%	8%	5%	3%	3%	2%	2%	2%	2%	2%
AVERAGE LOAD, NET TONS		53	28	20	51	26	44	17	12	32	12	24
ZONE	MILES											
Terminal	15	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35
1	60	50*/	55*	48	57*/	46*	57*/	47	43	56*	45	42*
2	120	65	74/	60*	80	54/	78	59*	50*	77/	55*	48/
3	180	80	94	72	102	64	99	71	59	98	65	54
4	240	94	113	85/	124	74	120	83	67/	119	75	61
5	300	109	133	99	146	83	142	95/	74	140	85/	67
6	360	124	152	110	168	93	163	107	82	161	95	73
7	420	139	171	122	191	102	184	119	90	181	105	79
8	480	153	192	135	213	112	205	131	98	202	115	86
9	540	168	210	147	235	122	227	143	106	223	125	92
10	600	183	230	160	257	131	248	155	114	244	135	98
11	660	198	249	172	279	141	269	167	122	265	145	105
12	720	213	269	185	301	150	291	179	129	286	155	111
13	780	227	288	197	324	160	312	191	137	307	165	117
14	840	242	308	210	346	169	333	203	145	328	175	124
15	900	257	327	222	368	179	354	214	153	349	185	130
16	960	272	347	234	390	189	376	226	161	369	195	136
17	1020	286	366	247	413	198	397	238	169	390	205	143
18	1080	301	386	259	434	208	418	250	176	411	215	149
19	1140	316	405	272	457	217	440	262	184	432	225	155
20	1200	331	424	284	479	227	461	274	192	453	235	162
21	1260	346	444	297	501	237	482	286	200	474	245	168
22	1320	360	463	309	523	246	503	298	208	495	255	174
23	1380	375	483	322	545	256	525	310	216	516	265	181
24	1440	390	502	334	568	265	546	322	223	537	275	187
25	1500	405	522	346	590	275	567	334	231	557	285	193
26	1560	419	541	359	612	285	588	346	239	578	295	200
27	1620	434	561	371	634	294	610	358	247	599	304	206
28	1680	449	580	384	656	304	631	370	255	620	314	212
29	1740	464	600	396	678	313	652	382	263	641	324	218
30	1800	479	619	409	701	323	674	394	270	662	334	225
31	1860	493	639	421	723	332	695	406	278	683	344	231
32	1920	508	658	434	745	342	716	418	286	704	354	237
33	1980	523	677	446	767	352	737	430	294	725	364	244
34	2040	538	696	459	789	361	759	441	302	745	374	250
35	2100	552	716	471	811	371	789	453	310	766	384	256
36	2160	567	735	483	834	380	801	465	318	787	394	263
37	2220	582	755	496	856	390	823	477	325	808	404	269
38	2280	597	774	508	878	400	844	489	333	829	414	275
39	2340	612	794	521	900	409	864	501	341	850	424	282
40	2400	626	813	533	922	419	886	513	349	871	434	288
41	2460	641	833	546	945	428	908	525	357	892	444	294
42	2520	656	852	558	967	438	929	537	365	913	454	301
43	2580	671	872	571	989	447	950	549	372	933	464	307
44	2640	685	891	583	1,011	457	971	561	380	954	474	313
45	2700	700	911	595	1,033	467	993	573	388	975	484	320
46	2760	715	930	608	1,055	476	1,014	585	396	996	494	326
47	2820	730	950	620	1,078	486	1,035	597	404	1,017	504	332
48	2880	744	969	633	1,100	495	1,057	609	412	1,038	514	339
49	2940	759	989	645	1,122	505	1,078	621	419	1,059	524	345
50	3000	774	1,008	658	1,144	515	1,099	633	427	1,080	534	351

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* Point at which Rail Charge becomes less than highway cost, allowing 65% empty haul via highway.
/ Point at which Rail Charge becomes less than highway cost, allowing no empty haul via highway.
# Groups producing in excess of 1-1/2% of revenues.

Analysis 49.14 Synthetic Scale of 1932 Rail Charges per Car of Eleven Important Individual Commodity Groups#

		CHARGES IN DOLLARS PER CAR										
STATISTICAL GROUP NUMBER		653 654	230	401	503	201	259	430	269	232	431	100
STATISTICAL COMMODITY		AUTO-MO-BILES	KINE	POTA-TOES	CE-MENT	CORN	ROAD AND FUEL OIL	CANNED GOODS	ORES	SWINE	SUGAR	SAND AND GRAVEL
PER CENT OF REVENUE PRODUCED		1.6%	1.5%	1.4%	1.4%	1.3%	1.2%	1.2%	1.2%	1.2%	1.0%	1.0%
AVERAGE LOAD, NET TONS		15	12	18	39	40	34	23	49	11	31	56
ZONE	MILES											
Terminal	15	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35
1	60	47	42	46	57*	54*	53*	49*	50*/	41	54*	44*/
2	120	59*	41*	56*	79/	72/	70/	64	66	46*	72/	53
3	180	71	54/	67	101	90	87	78/	81	52/	91	62
4	240	83	61	77/	123	109	105	92	96	57	109	71
5	300	94/	67	88	145	127	122	106	111	63	128	80
6	360	106	73	98	167	145	140	120	126	68	146	89
7	420	118	79	109	189	164	157	134	141	74	165	98
8	480	130	86	119	211	182	174	148	156	79	184	107
9	540	142	93	129	233	200	192	162	172	85	202	116
10	600	153	98	140	255	218	209	177	187	90	221	125
11	660	165	105	150	277	237	227	191	202	96	239	135
12	720	177	111	161	299	255	244	205	217	101	258	144
13	780	189	117	171	321	273	261	219	232	107	276	153
14	840	201	124	182	343	292	279	233	247	112	295	162
15	900	212	130	192	365	310	296	247	262	118	313	171
16	960	224	136	203	386	328	314	261	278	123	332	180
17	1020	236	143	213	408	347	331	275	293	129	350	189
18	1080	248	149	224	430	365	348	290	308	134	369	198
19	1140	260	155	234	452	383	366	304	323	140	387	207
20	1200	271	162	245	474	402	383	318	338	145	406	216
21	1260	283	168	255	496	420	401	332	353	151	425	225
22	1320	295	174	266	518	438	418	346	368	156	443	234
23	1380	307	180	276	540	457	435	360	384	162	462	243
24	1440	319	187	286	562	475	453	374	399	167	480	252
25	1500	331	193	297	584	493	470	389	414	173	499	261
26	1560	342	199	307	606	512	487	403	429	178	517	270
27	1620	354	206	318	628	530	505	417	444	184	536	279
28	1680	366	212	328	650	548	522	431	459	189	554	288
29	1740	378	218	339	672	567	540	445	475	195	573	297
30	1800	390	225	349	694	585	557	459	490	200	591	306
31	1860	401	231	360	716	603	574	473	505	206	610	315
32	1920	413	237	370	738	622	597	487	520	211	628	324
33	1980	425	244	381	760	640	609	502	535	217	647	333
34	2040	437	259	391	782	657	627	516	550	222	666	342
35	2100	449	256	402	803	677	644	530	565	228	684	351
36	2160	460	263	412	825	695	661	544	581	233	703	360
37	2220	472	269	422	847	713	679	558	596	239	721	369
38	2280	484	275	433	869	731	696	572	611	244	740	378
39	2340	496	281	443	891	750	714	586	626	250	758	387
40	2400	508	288	454	913	768	731	600	641	255	777	396
41	2460	520	294	464	935	786	748	615	656	261	795	405
42	2520	531	300	475	957	804	766	629	671	266	814	414
43	2580	543	307	485	979	823	783	643	687	272	832	423
44	2640	555	313	496	1,001	841	801	657	702	277	851	432
45	2700	567	319	506	1,023	860	818	671	717	283	869	441
46	2760	579	326	517	1,045	878	835	685	732	288	888	450
47	2820	590	331	527	1,067	896	853	699	747	294	907	459
48	2880	602	338	538	1,089	915	870	713	762	299	925	468
49	2940	614	345	548	1,111	933	887	728	777	305	944	477
50	3000	626	350	559	1,133	951	905	742	793	310	962	486

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* Point at which Rail Charge becomes less than highway cost, allowing 65% empty haul via highway.
/ Point at which Rail Charge becomes less than highway cost, allowing no empty haul via highway.
Groups producing 1% to 1-1/2% of revenues.

Analysis 49.15 - Comparison of Carrier Rates for Transportation of Crude Petroleum between Points in Central Eastern Territory

ORIGIN	DESTINATION	RAIL MILES	RATES IN CENTS PER HUNDRED POUNDS: RAILWAY 1932	RAILWAY 1934	PIPE LINE 1932	PIPE LINE 1934	RATIO OF PIPE LINE RATES TO RAIL RATES 1932	1934
AVERAGE MOVEMENT		268.0	24.8	23.8	7.38	7.38	30%	31%
Bremen, Ohio	Bayway, New Jersey	588.0	41.0	40.0	11.06	11.06	27	27
Bremen, Ohio	Marcus Hook, Penna.	523.0	38.0	37.0	11.06	11.06	29	29
Killbuck, Ohio	Oil City, Penna.	174.0	24.0	23.0	6.71	6.71	28	29
Haydenville, Ohio	Carnegie, Penna.	205.2	21.0	20.0	4.69	4.69	22	23
Haydenville, Ohio	Titusville, Penna.	295.7	24.0	23.0	7.88	7.88	33	34
Killbuck, Ohio	Titusville, Penna.	191.0	25.0	24.0	7.88	7.88	32	32
Barnesville, Ohio	Oil City, Penna.	184.0	20.0	19.0	6.71	6.71	34	35
Barnesville, Ohio	Franklin, Penna.	176.0	20.0	19.0	6.04	6.04	30	21
Barnesville, Ohio	Pittsburgh, Penna.	92.0	16.0	15.0	4.69	4.69	29	31
Black Run, Ohio	Parkersburg, W.Va.	111.0	21.0	20.0	5.03	5.03	24	25
Morgantown, W.Va.	Carnegie, Penna.	104.0	16.0	15.0	4.69	4.69	29	31
Morgantown, W.Va.	Pittsburgh, Penna.	99.0	16.0	15.0	4.69	4.69	29	31
Morgantown, W.Va.	Bayway, New Jersey	429.0	29.0	28.0	11.06	11.06	38	39
Morgantown, W.Va.	Franklin, Penna.	199.0	20.0	19.0	6.04	6.04	30	31
Morgantown, W.Va.	Oil City, Penna.	209.0	21.0	20.0	6.71	6.71	32	33
Morgantown, W.Va.	Titusville, Penna.	226.0	21.0	20.0	7.88	7.88	28	39
Martinsville, Ill.	Lima, Ohio	239.0	28.0	27.0	7.08	7.08	25	26
Stoy, Ill.	Cygnet, Ohio	361.7	25.0	24.0	8.45	8.45	34	35
Bridgeport, Ill.	Cygnet, Ohio	317.0	25.0	24.0	8.45	8.45	34	35
Martinsville, Ill.	East Sparta, Ohio	395.0	33.0	32.0	10.14	10.14	31	31
Bridgeport, Ill.	Toledo, Ohio	342.0	25.0	24.0	9.81	9.81	39	40
Owensboro, Ky.	Lawrenceville, Ill.	102.0	26.0	25.0	4.02	4.02	15	16
Preble, Ind.	Lima, Ohio	48.9	16.0	15.0	2.68	2.68	17	17
Point Breeze, Penna.*	Pittsburgh, Penna.	360.0	32.0	31.0	10.39	10.39	32	33
Point Breeze, Penna.*	Franklin, Penna.	370.0	32.0	31.0	9.05	9.05	28	29
Millway, Penna.	Bayway, New Jersey	141.0	19.0	18.0	4.83	4.83	25	27
Stoy, Ill.	Constable Hook, N.J.	921.0	42.0	41.0	16.73	16.73	40	40
Centerbridge, Penna.#	Bayway, New Jersey	100.0	17.0	16.0	2.25	2.25	13	14

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* Philadelphia, Penna.
# R.R. New Hope, Penna.

Analysis 49.16 - Comparison of Carrier Rates for Transportation of Crude Petroleum from Kansas and Oklahoma Fields to Central East Territory

ORIGIN	DESTINATION	RAIL MILES	RATES IN CENTS PER HUNDRED POUNDS				RATIO OF PIPE LINE RATES TO RAIL RATES	
			RAILWAY		PIPE LINE			
			1932	1934	1932	1934	1932	1934
AVERAGE MOVEMENT		805.6	36.4	35.4	16.59	14.70		
Walnut, Kansas	East Chicago, Ind.	565.0	28.0	27.0	14.80	12.87	53%	47%
Healdton, Okla.	East Chicago, Ind.	914.9	30.0	29.0	14.80	14.80	49	51
Wewoka, Okla.	East Chicago, Ind.	798.8	30.0	29.0	14.80	14.80	49	51
Healdton, Okla.	Toledo, Ohio	1122.5	44.0	43.0	19.63	19.63	45	46
Wewoka, Okla.	Toledo, Ohio	951.6	44.0	43.0	19.63	19.63	45	46
Healdton, Okla.	Wood River, Ill.	646.8	25.0	24.0	11.99	11.99	48	50
Wewoka, Okla.	Wood River, Ill.	551.7	25.0	24.0	11.99	11.99	48	49
Drumright, Okla.	Toledo (Bayshore), Ohio	940.5	44.0	43.0	19.14	16.81	44	39
Drumright, Okla.	Heath, Ohio	926.8	46.0	45.0	20.27	17.86	44	40
Drumright, Okla.	Charleston, W.Va.	1020.8	47.5	46.5	20.83	18.34	44	39
Drumright, Okla.	Springfield, Mo.	239.0	22.5	21.5	8.85	7.88	39	35
Drumright, Okla.	Int.Boundary,Port Huron,Mich.	1012.8	49.0	48.0	20.11	17.70	41	37
Drumright, Okla.	Cleveland, Ohio	1013.8	47.5	46.5	20.11	17.70	42	38
Hewitt, Okla.	Int.Boundary,Port Huron,Mich.	1164.1	49.0	48.0	20.11	17.70	41	37
Hewitt, Okla.	Cabin Creek, W.Va.	1179.6	50.5	49.5	20.83	18.34	41	37
Hewitt, Okla.	Heath, Ohio	1267.2	46.0	45.0	20.27	17.86	44	40
Oklahoma City,Okla.	Latonia, Ky.	885.1	41.0	40.0	18.66	16.41	46	41
Oklahoma City,Okla.	Cleveland, Ohio	1054.3	47.5	46.5	20.11	17.70	42	38
Oklahoma City,Okla.	Parkersburg, W.Va.	1064.6	47.5	46.5	20.83	18.34	44	39
Oklahoma City,Okla.	Lima, Ohio	921.5	42.5	41.5	18.66	16.41	44	40
Lucien, Okla.	Int.Boundary,Port Huron,Mich.	1029.5	49.0	48.0	20.11	17.70	41	37
Lucien, Okla.	Latonia, Ky.	863.1	41.0	40.0	18.66	16.41	46	41
Lucien, Okla.	Toledo (Bayshore), Ohio	926.3	44.0	43.0	19.14	16.81	44	39
Lucien, Okla.	Cleveland, Ohio	1020.8	46.5	46.5	20.11	17.70	43	38
Lucien, Okla.	Cabin Creek, W.Va.	1070.8	50.5	49.5	20.83	18.34	41	37
Lucien, Okla.	Parkersburg, W.Va.	1041.6	47.5	46.5	20.84	18.34	44	39
Lucien, Okla.	Heath, Ohio	966.2	46.0	45.0	20.27	17.86	44	40
Lucien, Okla.	Lima, Ohio	888.0	42.5	41.5	18.66	16.41	42	40
Arkansas City, Kan.	East Chicago, Ind.	675.5	30.0	29.0	14.80	12.39	49	43
Burleston, Texas	East Chicago, Ind.	953.0	32.0	31.0	23.17	18.98	72	61
Arkansas City, Kan.	Roxana, Ill.	512.3	25.0	24.0	10.94	8.37	44	35
Bartlesville, Okla.	Cleveland, Ohio	909.0	47.5	46.5	20.11	17.70	42	38
Bartlesville, Okla.	East Chicago, Ind.	641.0	30.0	29.0	14.80	13.19	50	45
Bartlesville, Okla.	Kansas City, Kan.	193.9	21.0	20.0	9.89	8.29	47	41
Bartlesville, Okla.	Charleston, W.Va.	939.0	47.5	46.5	20.83	18.34	44	39
Drumright, Okla.	Sugar Creek, Mo.	297.8	22.5	20.5	9.89	8.29	44	40
Eldorado, Kan.	Sugar Creek, Mo.	187.5	10.0	9.0	9.89	8.29	99	92
Drumright, Okla.	Whiting, Ind.	761.8	30.0	29.0	14.80	13.19	49	45
Eldorado, Kan.	Whiting, Ind.	708.4	30.0	29.0	14.80	13.19	49	45
Drumright, Okla.	Wood River, Ill.	498.9	25.0	24.0	11.99	10.38	48	43
Eldorado, Kan.	Wood River, Ill.	445.9	25.0	24.0	11.99	10.38	48	43
Devol, Okla.	Sugar Creek, Mo.	479.0	28.5	27.5	9.89	8.29	35	30
Devol, Okla.	Whiting, Ind.	920.0	37.0	36.0	14.80	13.19	40	36
Oklahoma City,Okla.	Lawrenceville, Ill.	682.2	30.0	29.0	14.80	12.87	49	44
Oklahoma City,Okla.	Lockport, Ill.	754.4	30.0	29.0	14.80	12.87	49	44
Oklahoma City,Okla.	East Chicago, Ind.	784.2	30.0	29.0	14.80	12.87	49	44
Oklahoma City,Okla.	Lemont, Ill.	765.0	30.0	29.0	14.80	12.87	49	44
Cushing, Okla.	Lawrenceville, Ill.	686.0	30.0	29.0	14.80	12.87	49	44
Cushing, Okla.	East Chicago, Ind.	765.0	30.0	29.0	14.80	12.87	49	44
Seminole, Okla.	East Chicago, Ind.	811.3	30.0	29.0	14.80	12.87	49	44
Seminole, Okla.	Lawrenceville, Ill.	668.0	30.0	29.0	14.80	12.87	49	44

Analysis 49.17 - Comparison of Carrier Rates for Transportation of Crude Petroleum from Texas Fields to Western Trunk Line and East Central Territory

ORIGIN	DESTINATION	RAIL MILES	RATES IN CENTS PER HUNDRED POUNDS				RATIO OF PIPE LINE RATES TO RAIL RATES	
			RAILWAY		PIPE LINE			
			1932	1934	1932	1934	1932	1934
AVERAGE MOVEMENT		861.5	36.9	36.5	20.4	19.1	55%	52%
Big Sandy, Texas	Neville Island, Penna.	1156.5	51.5	51.5	22.44	22.44	44	43
Big Sandy, Texas	Toledo (Bayshore), Ohio	993.0	45.0	45.0	20.75	20.75	46	46
Big Sandy, Texas	Cleves, Ohio	869.1	42.0	42.0	20.27	20.27	48	48
Eldorado, Kansas	Neville Island, Penna.	1029.3	49.0	49.5	20.83	20.83	43	42
Eldorado, Kansas	Toledo (Bayshore), Ohio	826.8	42.5	43.0	19.14	19.14	45	45
Eldorado, Kansas	Cleves, Ohio	752.9	39.5	40.0	18.66	18.66	47	47
Van, Texas	Toledo (Bayshore), Ohio	1040.0	45.0	45.0	25.58	25.58	57	57
Longview, Texas	Toledo (Bayshore), Ohio	976.0	45.0	45.0	25.58	25.58	57	57
Longview, Texas	Cleveland, Ohio	1047.0	48.5	48.5	26.54	26.54	55	55
Longview, Texas	Int.Boundary,Port Huron,Mich.	1083.0	50.0	50.0	26.54	26.54	53	53
Longview, Texas	Heath, Ohio	975.0	47.0	47.0	26.71	26.71	57	57
Longview, Texas	Parkersburg, W.Va.	1030.8	48.5	48.5	27.27	27.27	56	56
Longview, Texas	Charleston, W.Va.	1014.6	48.5	48.5	27.27	27.27	56	56
Longview, Texas	Cedin Creek, W.Va.	1023.8	51.5	51.5	27.27	27.27	53	53
Longview, Texas	Latonia, Ky.	841.0	42.0	42.0	25.10	25.10	60	60
Longview, Texas	Lima, Ohio	905.7	43.5	43.5	25.10	25.10	57	58
Burleson, Texas	Roxena, Ill.	709.0	27.5	26.5	19.31	15.12	70	57
Hensley, Texas	Kansas City, Kansas	549.5	24.5	23.5	9.89	9.89	40	42
Tiffin, Texas	Kansas City, Kansas	598.0	26.0	25.0	9.89	9.89	38	39
Troup, Texas	Coffeyville, Kansas	400.4	17.5	27.0	11.26	11.26	64	41
Troup, Texas	East Chicago, Indiana	862.5	32.0	31.0	21.24	21.24	66	68
Troup, Texas	Kansas City, Kansas	558.5	24.5	23.5	16.33	16.33	67	69
Longview, Texas	Sugar Creek, Mo.	578.4	21.0	20.0	16.33	10.78	78	53
Longview, Texas	Whiting, Ind.	841.7	32.0	31.0	21.24	15.69	66	50
Bullock, Texas	Sugar Creek, Mo.	531.7	24.5	23.5	13.11	9.89	54	42
Bullock, Texas	Whiting, Ind.	1059.9	32.0	31.0	18.02	14.80	56	47
Wiokett, Texas	Whiting, Ind.	1244.7	33.5	32.5	22.52	19.31	67	59
Mexia, Texas	Sugar Creek, Mo.	567.1	24.5	23.5	9.89	9.89	40	42
Mexia, Texas	Whiting, Ind.	992.5	32.0	31.0	14.80	14.80	46	47
Wiokett, Texas	Wood River, Ill.	1035.9	28.5	27.5	19.31	16.09	68	58
Reeds, Texas	Lawrenceville, Ill.	665.4	34.0	31.0	21.24	17.70	62	57
Reeds, Texas	East Chicago, Indiana	844.5	32.0	31.0	21.24	17.70	66	57
Reeds, Texas	Lemont, Illinois	847.2	34.0	31.0	21.24	17.70	62	57
Reeds, Texas	Lockport, Illinois	839.6	34.0	31.0	21.24	17.70	62	57

Analysis 49.18 Comparison of Carrier Rates for Transportation of Crude Petroleum from Mid-Continent Fields to Gulf Ports and Southwest

ORIGIN	DESTINATION	RAIL MILES	RATES IN CENTS PER HUNDRED POUNDS				RATIO OF PIPE LINE RATES TO RAIL RATES	
			RAILWAY		PIPE LINE			
			1932	1934	1932	1934	1932	1934
AVERAGE MOVEMENT		387.9	21.3	20.6	9.38	8.61	44%	42%
Longview, Tex.	Port Arthur, Tex.	222.6	13.0	8.8	7.24	7.24	56	82
Longview, Tex.	Houston, Tex.	221.7	9.7	8.8	7.24	7.24	75	83
Hobbs, New Mexico	Arteoo, Tex.	757.6	28.5	27.5	8.85	8.04	41	29
Wink, Tex.	Arteoo, Tex.	692.7	28.5	27.5	8.85	8.04	41	29
Longview, Tex.	Shreveport, La.	63.7	7.7	6.6	4.83	4.83	63	73
Longview, Tex.	Smackover, Ark.	190.5	21.0	20.0	4.83	4.83	23	24
Walnut, Kan.	Cushing, Okla.	165.0	20.0	19.0	2.57	2.57	13	13
Oklahoma City, Okla.	Port Arthur, Tex.	503.5	33.0	32.0	12.07	10.46	37	33
Oklahoma City, Okla.	Houston, Tex.	464.0	31.5	20.0	12.07	10.46	38	52
Eldorado, Kan.	Fort Worth, Tex.	379.7	28.0	27.0	12.87	12.87	46	48
Eldorado, Kan.	Port Arthur, Tex.	675.3	23.0	37.5	16.89	16.89	73	45
Pawnee, Okla.	Fort Worth, Tex.	281.7	25.0	20.0	6.44	6.44	26	32
Pawnee, Okla.	Port Arthur, Tex.	560.3	34.5	33.5	10.46	10.46	30	31
Caddo, La.	Port Arthur, Tex.	246.9	16.0	11.0	7.24	7.24	45	65
De Soto, La.	Port Arthur, Tex.	212.0	15.0	11.0	7.24	7.24	48	65
Homer, La.	Port Arthur, Tex.	281.9	17.5	16.5	9.65	9.65	55	58
Eldorado, Ark.	Port Arthur, Tex.	310.0	17.0	16.0	10.46	10.46	62	65
Vinton, La.	Port Arthur, Tex.	56.1	10.0	9.0	4.83	4.83	48	54
Winkler, Tex.*	Baytown, Tex.	248.2	12.0	12.0	8.85	8.04	74	67
Winkler, Tex.*	Texas City, Tex.	229.6	12.0	12.0	8.85	8.04	74	67
Pecos, Tex.	Ingleside, Tex.	694.4	27.5	26.5	8.04	8.04	29	30
Big Spring, Tex.	Baytown, Tex.	505.6	21.0	20.0	8.85	8.04	42	40
Van, Tex.	Anchorage, La.	349.6	23.5	22.5	6.44	6.44	27	28
Healdton, Okla.	Beaumont, Tex.	425.0	19.0	18.0	11.26	11.26	59	63
Wewona, Okla.	Beaumont, Tex.	446.4	21.1	20.0	12.07	12.07	57	60
Kings Mill, Tex.	Beaumont, Tex.	659.9	21.0	20.0	12.07	12.07	57	60
Kings Mill, Tex.	Magpetoo, Tex.	666.2	22.5	21.5	12.07	12.07	54	56
Cresoent, Okla.	Anchorage, La.	737.9	40.0	39.0	12.07	10.62	30	27
Drumright, Okla.	Anchorage, La.	631.6	37.0	36.0	12.07	10.62	33	30
Grainola, Okla.	Anchorage, La.	666.4	33.0	32.0	14.24	12.55	43	39
Ralston, Okla.	Anchorage, La.	656.6	38.0	37.0	13.51	11.90	36	32
Drumright, Okla.	Arkansas City, Kan.	107.0	16.0	15.0	8.04	4.83	50	32
Burleson, Tex.	Arkansas City, Kan.	340.0	26.5	25.5	16.09	9.65	61	37
Kings Mill, Tex.	Sinoo) Tex. City) Tex.	597.9	21.0	20.0	12.07	12.07	57	60
Ringling, Okla.	Sinco) Rates) Tex.	393.4	19.0	18.0	8.04	8.04	42	45
Kings Mill, Tex.	Fort Worth, Tex.	337.2	16.0	16.0	5.47	5.47	34	34
Hensley, Tex.	Smith's Bluff, Tex.	403.2	30.0	29.0	8.85	8.85	30	31
Tiffin, Tex.	Smith's Bluff, Tex.	411.1	21.5	20.5	8.85	8.85	41	43
Troup, Tex.	Fort Worth, Tex.	156.9	19.0	18.0	4.83	4.83	25	26
Troup, Tex.	Smith's Bluff, Tex.	194.0	20.0	19.0	5.63	5.63	28	29
Smackover, Ark.	Anchorage, La.	260.0	13.0	22.5	14.48	14.48	111	64
Smackover, Ark.	Grand Lake (RR Eu-	163.4	17.0	16.0	6.44	6.44	38	40
Strong, Ark.	Grand Lake (dora) Kan.	127.6	18.5	16.5	4.83	4.83	26	19
Mandville, Ark.	Anchorage, La.	301.3	26.0	25.0	9.65	9.65	37	38
Nettleton, Tex.#	Okmulgee, Okla.	345.6	27.5	26.5	9.65	9.65	35	36
Bradford, Tex. ø	Port Arthur, Tex.	202.2	12.0	12.0	4.83	4.83	40	40
Nettleton, Tex.#	Port Arthur, Tex.	248.6	21.5	14.0	4.83	4.83	22	34
Shreveport, La.	Port Arthur, Tex.	221.9	14.0	13.0	7.24	6.44	52	50
Louann, Ark.	Port Arthur, Tex.	327.9	15.0	26.5	10.46	8.85	70	33
Kings Mill, Tex.	Port Arthur, Tex.	675.3	22.5	21.5	12.07	10.46	54	49
Kings Mill, Tex.	Houston, Tex.	597.9	21.0	20.0	12.07	10.46	57	52
Joiner, Tex.	Port Arthur, Tex.	204.2	17.5	17.5	4.83	4.83	28	28
Joiner, Tex.	Houston, Tex.	101.2	14.0	14.0	4.83	4.83	35	35
Greta, Tex.	Ingleside, Tex.	52.7	16.0	14.0	4.02	3.22	25	23
Cushing, Okla.	(West) Dallas, Tex.	256.0	15.5	15.5	6.44	5.63	42	36
Cushing, Okla.	Houston, Tex.	504.0	16.0	16.0	12.07	10.46	75	65
Cushing, Okla.	Port Arthur, Tex.	528.0	16.0	16.0	12.07	10.46	75	65
West Tulsa, Okla.	Houston, Tex.	516.0	19.0	18.0	12.07	10.46	64	58
West Tulsa, Okla.	Port Arthur, Tex.	545.2	19.0	18.0	12.07	10.46	64	58
Okmulgee, Okla.	Houston, Tex.	472.6	19.0	18.0	12.07	10.46	64	58
Okmulgee, Okla.	Port Arthur, Tex.	501.7	19.0	18.0	12.07	10.46	64	58
Burbank, Okla.	Houston, Tex.	555.0	34.5	33.5	14.48	10.46	42	31
Burbank, Okla.	Port Arthur, Tex.	584.3	35.5	34.5	14.48	10.46	41	30

* R.R. Corsicana, Tex. # R.R. Jonesville, Tex. ø R.R. Palestine, Tex.

Analysis 49.19 Comparison of Carrier Rates for Transportation of Gasoline

ORIGIN	DESTINATION	RAIL MILES	RATES IN CENTS PER HUNDRED POUNDS				RATIO OF PIPE LINE RATES TO RAIL RATES	
			RAILWAY		PIPE LINE			
			1932	1934	1932	1934	1932	1934
AVERAGE MOVEMENT		369	28	28	22	20	79%	72%
Eldorado, Kan.	Kansas City, Kan.	171	20	19	19	19	99	100
West Tulsa, Okla.	Kansas City, Kan.	145	27	26	27	25	100	100
Eldorado, Kan.	Chicago, Ill.	606	37	34	37	36	99	106
West Tulsa, Okla.	Chicago, Ill.	681	37	36	37	36	99	100
Eldorado, Kan.	Minneapolis, Minn.	614	41	40	41	40	99	100
West Tulsa, Okla.	Minneapolis, Minn.	714	43	42	43	42	99	100
Eldorado, Kan.	Omaha, Neb.	365	31	30	30	30	99	100
West Tulsa, Okla.	Omaha, Neb.	427	34	33	34	33	99	100
Eldorado, Kan.	East St. Louis, Ill.	427	31	30	31	30	100	99
West Tulsa, Okla.	East St. Louis, Ill.	429	31	30	31	30	100	99
Eldorado, Kan.	Des Moines, Iowa	353	31	30	30	30	99	100
West Tulsa, Okla.	Des Moines, Iowa	453	34	33	34	33	99	100
Borger, Texas	East St. Louis, Ill.	805	34	33	33	33	97	100
Borger, Texas	Kansas City, Kan.	548	31	30	30	30	97	100
Borger, Texas	Coralville, Iowa	838	39	38	39	39	99	103
Kansas City, Kan.	East St. Louis, Ill.	276	23	22	23	23	100	105
Borger, Texas	Chicago, Ill.	984	40	39	40	38	100	99
Borger, Texas	Minneapolis, Minn.	993	46	45	45	45	99	100
Borger, Texas	Omaha, Neb.	663	37	36	36	36	99	100
Borger, Texas	Des Moines, Iowa	731	37	36	36	36	99	100
Twin Oaks, Penna.*	Malvern, Penna.	29	13	12	12	5	94	42
Twin Oaks, Penna.*	Reading, Penna.	70	13	12	13	6	99	48
Twin Oaks, Penna.*	Lancaster, Penna.	66	14	13	13	6	96	51
Twin Oaks, Penna.*	Allentown, Penna.	81	15	14	13	6	92	43
Twin Oaks, Penna.*	York, Penna.	97	17	16	13	6	80	41
Twin Oaks, Penna.*	Harrisburg, Penna.	102	17	16	13	6	78	41
Twin Oaks, Penna.*	Tamaqua, Penna.	110	20	19	13	6	66	34
Twin Oaks, Penna.*	Hazelton, Penna.	129	21	20	14	8	65	39
Twin Oaks, Penna.*	Exeter, Penna.	166	23	22	14	8	61	36
Twin Oaks, Penna.*	Johnstown, Penna.	272	28	27	15	11	54	40
Twin Oaks, Penna.*	Binghamton, N. Y.	226	26	25	15	9	56	37
Twin Oaks, Penna.*	Cortland, N. Y.	270	28	27	16	11	55	40
Twin Oaks, Penna.*	Syracuse, N. Y.	306	30	29	16	13	54	43
Twin Oaks, Penna.*	Kittanning,Pa.(Blawnor)	350	32	31	16	13	51	41
Twin Oaks, Penna.*	Vanport, Pa. (Beaver)	385	32	31	17	14	55	44
Twin Oaks, Penna.*	Youngstown, Ohio	414	33	32	17	14	51	42
Twin Oaks, Penna.*	Akron, Ohio	465	36	35	18	15	49	43
Twin Oaks, Penna.*	Cleveland, Ohio	480	36	35	18	17	50	47
Bayway, N. J.	Barto, Penna.	119	22	21	6	6	30	30
Bayway, N. J.	Centerbridge, Penna.#	96	21	20	5	5	26	27
Bayway, N. J.	Cisna Run, Penna.	207	22	41	9	9	41	22
Bayway, N. J.	East Freedom, Penna.	316	31	30	11	11	34	35
Bayway, N. J.	Hamilton, N. J.	29	13	11	5	5	38	45
Bayway, N. J.	Midland, Penna.	415	35	34	14	14	41	42
Bayway, N. J.	Reed, Penna.	169	25	24	12	12	48	49

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* Marous Hook, Penna.

R.R. New Hope

SECTION 49. COMMODITY LEVEL

Analysis 49.20 Pipe Line Patronage (Trunk Line Only) - 1931

	ALL COMPANIES	NORTH ATLANTIC COAST	GREAT LAKES SOUTHWEST	SOUTHWEST GULF
PROPRIETARY PATRONS ONLY				
Number of Companies	12	4	5	3
Tonnage Handled (Thousands)	9,274	1,634	6,357	1,283
Percentages - Total Tonnage - All Companies	8%	20%	15%	2%
MIXED PATRONAGE#				
Number of Companies	20	2	6	12
Tonnage Handled (Thousands)	82,211	1,611	21,873	58,727
Tonnage of Proprietors (Thousands)	63,982	1,012	14,233	48,737
Tonnage of Others (Thousands)	18,229	599	7,643	9,987
Percentages - Total Tonnage - All Companies	75%	20%	53%	98%
NO TRAFFIC HANDLED FOR PROPRIETORS				
Number of Companies	9	5	4	-
Tonnage Handled (Thousands)	17,976	4,936	13,040	-
Percentages - Total Tonnage - All Companies	16%	60%	32%	-
ALL COMPANIES#				
Total Companies	41	11	15	15
Total Tonnage Handled (Thousands)	109,461	8,181	41,270	60,010
Proprietors' Tonnage (Thousands)	73,256	2,646	20,590	50,020
Percentages - Proprietors' Tonnage	67%	32%	50%	83%

Excludes four companies for which segregation of traffic between proprietory and others not available.

SECTION 50. EFFECT OF PRICE LEVEL

Analysis 50.1 Result of Highway Lower Charges

BUSINESS GROUPS	TONS REPORTED BY SHIPPERS					
	ALL SHIPPERS #			SHIPPERS USING HIGHWAY ON ACCOUNT OF LOWER CHARGESø		
	TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT	TOTAL TONNAGE (000)	HIGHWAY TONNAGE (000)	PER CENT
ALL GROUPS	290,203	16,275	6%	70,671	9,751	14%
I ROUGH MATERIAL*	12,350	1,683	14%	3,204	974	30%
34 Sand, Stone, Gravel	12,060	1,670	14	3,203	972	30
8b Timber	290	14	5	4	2	48
II RAW MATERIAL*	67,284	1,959	3%	5,021	388	8%
10aGrain	3,068	3	‡	-	-	-
16 Fresh Fruits and Vegetables	2,436	482	20	567	125	22
22 Livestock and Poultry	832	476	57	40	23	58
12 Coal, Coke and Fuel	45,165	539	1	1,203	65	5
26 Ores and Concentrates	8,463	48	1	1,955	25	1
8c Lumber	6,833	318	5	1,135	111	10
03 Barrels, Cooperage Material	487	93	19	120	38	32
III SEMIPROCESSED MATERIAL*	12,748	1,314	10%	7,236	1,131	16%
13 Cotton, Cotton Linters	1,259	185	15	550	126	23
29 Paper, Paper Products	11,439	1,123	10	6,666	1,001	15
35 Horticultural Material	50	5	10	20	4	18
IV NECESSARIES*	50,748	3,869	8%	17,649	2,333	13%
04 Beverages and Liquors	1,063	339	32	519	247	48
36 Sugar, Syrups and Molasses	9,679	648	7	427	55	13
39 Vegetable Oil, Meal and Cake	1,360	213	16	334	58	17
27 Packing House Products	7,534	494	7	7,026	467	7
02 Bakery Goods, Confectionery	1,486	258	17	1,280	247	19
09 Canned Goods	2,342	299	13	826	178	22
18 Groceries	2.362	544	23	931	356	38
10bCereals, Flour, Mill Products	18,401	406	2	4,417	353	8
17 Furniture and Furnishings	606	66	11	69	37	54
31 Porcelain, China, Etc.	152	6	4	47	2	4
21 Leather and Leather Goods	927	77	8	282	58	20
37 Textiles	4,166	433	10	1,271	188	15
07 Boots and Shoes	506	50	10	97	43	44
15 Dry Goods, Clothing	163	37	23	34	12	36
V AUXILIARIES*	98,280	4,192	4%	22,471	3,088	14%
8a Masonry Materials, (except wood)	17,756	830	5	2,691	780	29
30 Petroleum, Crude and Refined	37,422	1,249	3	12,285	989	8
28 Paints, Varnishes and Gums	197	36	18	85	15	17
11 Chemicals	6,807	322	5	1,708	154	9
40 Miscellaneous Commodities	36,098	1,755	5	5,701	1,152	20
VI ACCESSORIES*	48,793	3,258	7%	15,090	1,837	12%
19 Iron and Steel, Structural	11,363	226	2	658	73	11
20 Iron and Steel Articles	19,935	998	5	6,611	618	9
24 Metals, Non-ferrous	1,921	216	11	997	129	13
33 Rubber, Rubber Articles, Tires	1,584	213	13	781	85	11
23 Machinery, Vehicles, etc.	4,974	205	4	803	97	12
32 Plumbing and Heating Supplies	529	21	4	263	17	6
01 Automotive Vehicles and Parts	6,331	1,253	20	4,378	734	17
05 Boats, Marine Equipment	154	1	1	⌿	⌿	10
06 Books and Periodicals	821	55	7	338	46	14
14 Department Store Merchandise	466	37	8	207	32	15
38 Tobacco, Tobacco Products	710	32	5	51	6	12
25 Musical Instruments and Supplies	5	⌿	3	3	⌿	5

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

As reported by respondents to Shippers' Inquiry.

ø As reported by respondents to Shippers' Inquiry.

⌿ Less than 500 tons.

‡ Less than ½%.

SECTION 53. CARRIER STRUCTURES

Analysis 53.1 Railway District Revenue and Traffic Statistics - 1932

	EASTERN DISTRICT	POCAHONTAS	SOUTHERN DISTRICT*	WESTERN DISTRICT
REVENUE PER CAR MILE				
All Traffic	$ .3123	$ .3006	$ .2915	$ .2671
Local Traffic	.4319	.3582	.4160	.3728
Interline Traffic	.3105	.2932	.2904	.2638
Intermediate Traffic	.1989	.1997	.1911	.1610
REVENUE PER TON MILE				
All Traffic	$ .010629	$ .006139	$ .010568	$ .011269
Local Traffic	.013438	.006247	.013213	.013786
Interline Traffic	.010791	.005987	.010315	.011089
Intermediate Traffic	.007038	.006751	.008307	.008089
AVERAGE HAUL (MILES)				
All Traffic	162.32	283.86	197.28	242.30
Local Traffic	160.19	329.19	154.28	176.37
Interline Traffic	158.13	286.76	205.09	260.67
Intermediate Traffic	177.73	234.12	248.19	372.22
AVERAGE LOAD (TONS)				
All Traffic	29.38	48.97	27.58	23.71
Local Traffic	32.14	57.33	31.48	27.04
Interline Traffic	28.77	48.97	28.16	23.79
Intermediate Traffic	28.26	29.58	23.00	19.90

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* Excluding Pocahontas.

SECTION 67. STATISTICS USED

Analysis 67.1 Rail Operative Service Units - 1932

UNITS	DISTRICTS				TERRITORIES								
	UNITED STATES (000)*	EASTERN (000)*	SOUTHERN (000)*	WESTERN (000)*	NEW ENGLAND (000)*	TRUNK LINE (000)*	CENTRAL (000)*	POCAHONTAS (000)*	SOUTHEASTERN (000)*	WESTERN TRUNK LINE (000)*	SOUTHWESTERN (000)*	PACIFIC NORTHWEST (000)*	PACIFIC SOUTHWEST (000)*
Revenue *	$ 2,559	$ 1,122	$ 487	$ 950	-	-	-	-	-	-	-	-	-
Route Miles	243	68	43	133	8	22	38	8	35	59	36	20	18
Schedules	5,333	2,572	929	1,832	248	1,263	1,061	295	634	922	467	201	243
Schedule Hours	24,407	10,267	4,400	9,740	852	4,234	5,180	1,303	3,098	4,635	2,377	1,204	1,524
Schedule Miles	391,053	157,570	70,744	162,739	12,376	59,028	86,166	17,023	53,721	77,458	41,247	19,374	24,659
Vehicles #	27,147	14,562	4,627	8,663	1,613	6,103	6,846	1,680	2,947	4,784	2,101	726	1,052
Carload	18,067	10,356	3,314	6,482	903	4,455	4,998	1,428	1,886	3,492	1,639	530	820
L.C.L.	9,079	4,206	1,313	2,181	710	1,648	1,849	252	1,061	1,292	462	196	231
Vehicle Miles - Loaded *	10,333	4,686	1,709	3,938	346	1,881	2,459	558	1,151	1,808	903	530	698
Net Tons #	646,223	363,411	132,427	170,177	25,918	164,349	173,145	69,394	63,033	92,759	43,100	16,660	17,658
Carload	630,989	355,106	129,212	165,679	24,363	161,062	169,682	68,700	60,512	89,976	42,238	16,160	17,305
L.C.L.	15,234	8,305	3,215	4,498	1,555	3,287	3,463	694	2,521	2,783	862	500	353
Net Ton Miles *	235,638	113,428	47,319	74,892	6,034	48,246	59,148	21,300	26,018	35,080	17,746	10,328	11,737
Equated Ton Miles *	455,788	219,400	91,527	144,861	11,672	93,321	114,407	41,201	50,327	67,854	34,326	19,978	22,703
Gross Ton Miles, including Locomotive*	746,772	343,023	131,740	272,009	21,359	139,836	181,828	49,990	81,750	125,502	64,167	37,313	45,027
Car Ton Miles *	648,392	299,912	114,937	233,543	18,250	122,280	159,382	44,555	70,383	108,130	55,307	31,763	38,343
Terminal Cars	54,753	28,409	9,938	16,407	2,907	12,505	12,996	3,434	6,504	8,296	4,391	1,573	2,147
Single Carrier	49,036	25,518	9,244	14,273	2,803	12,023	10,692	3,313	5,932	6,873	3,942	1,466	1,992
Carload	31,844	16,918	6,012	8,913	1,646	8,224	7,048	2,578	3,435	3,867	2,518	1,066	1,463
L.C.L.	17,192	8,600	3,232	5,360	1,157	3,799	3,644	735	2,497	3,006	1,424	401	530
Multiple Carrier	5,718	2,890	694	2,134	104	482	2,304	122	572	1,423	449	107	154
Carload	5,336	2,610	655	2,072	95	431	2,084	114	541	1,376	442	102	152
L.C.L.	381	281	39	61	9	51	220	8	31	48	8	4	2
Total Carload	37,180	19,528	6,667	10,986	1,741	8,655	9,133	2,692	3,975	5,242	2,959	1,168	1,615
Total L.C.L.	17,573	8,881	3,271	5,421	1,167	3,851	3,863	742	2,529	3,054	1,431	405	531
Switch Engine Hours	36,142	20,074	5,174	10,894	1,137	8,865	10,072	1,412	3,762	6,025	2,270	1,146	1,453
Yard	29,378	16,419	4,167	8,792	922	7,004	8,492	1,036	3,131	5,034	1,709	879	1,170
Train Switching	6,764	3,655	1,007	2,102	214	1,861	1,580	375	631	991	561	267	283
All Expense and Taxes *	$ 1,966	$ 976	$ 308	$ 682	$ 79	$ 431	$ 465	$ 93	$ 214	$ 334	$ 153	$ 83	$ 112
Road Proportion *	898	398	154	346	37	172	188	48	106	154	82	49	62
Yard Proportion *	1,068	579	153	336	43	259	277	46	108	180	72	34	50
Total Line Expense *	1,237	592	203	443	48	266	279	63	140	204	103	59	77
Total Terminal Expense *	729	384	105	240	31	166	187	30	75	130	50	25	35

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* All figures in thousands, except those in lines marked * which are in millions.

For the United States, Cars and Net Tons originated; for all other Districts, Cars and Net Tons equated to represent one handling per Rate Territory.

SECTION 67. STATISTICS USED

Analysis 67.2 Rail Freight Expense and Taxes* - 1932 - Aggregate

PURPOSE DISTRICTS AND TERRITORIES	ALL EXPENSE AND TAXES#	OVERHEAD#			DIRECT EXPENSES														
						MAINTENANCE WAY AND STRUCTURES					MAINTENANCE EQUIPMENT				TRANSPORTATION				
								POWER					FREIGHT CAR						
		TOTAL OVERHEAD	ADMINISTRATION	TAXES	TOTAL DIRECT	TOTAL	ROADWAY	STRUCTURE	STATION	WHARVES DOCKS	TOTAL	LOCOMOTIVE	HOME	FOREIGN	TOTAL	MOVEMENT	SUPPLIES	STATION	FLOATAGE
Total Road and Yard																			
United States	$1,966	$ 371	$ 178	$ 193	$1,595	$ 254	$ 228	$ 12.2	$ 9.3	$ 4.4	$ 531	$ 192	$ 252	$86.7	$ 809	$ 610	$31.8	$ 155	$12.0
Eastern	976	184	88	96	793	110	98	5.7	4.4	2.2	268	97	123	47.7	415	308	17.2	79	10.9
Southern	308	60	29	31	248	47	42	2.0	1.5	.8	79	32	43	4.1	122	94	4.2	23	.6
Western	682	128	61	67	554	97	88	4.5	3.4	1.5	184	63	86	35.0	272	209	10.4	53	.5
New England	79	15	7	8	65	12	11	.5	.5	.1	19	7	7	4.4	34	25	1.0	8	ø
Trunk Line	431	82	39	43	350	43	37	2.3	2.1	1.4	116	47	52	17.9	190	138	7.3	35	9.5
Central	465	87	42	45	378	55	50	2.9	1.8	.6	133	44	64	25.4	190	145	9.0	35	1.4
Pocahontas	93	19	9	10	75	14	12	.9	.3	.5	25	11	14	Cr .3	36	28	1.6	6	.5
Southeastern	214	41	20	22	173	32	30	1.2	1.2	.3	54	21	29	4.4	86	65	2.6	18	.1
Western Trunk Line	334	63	30	33	271	46	41	2.4	1.7	1.3	91	29	46	16.0	134	101	5.7	27	ø
Southwestern	153	28	14	15	125	24	22	.9	.7	.1	42	14	18	9.8	60	45	1.5	13	.1
Pacific Northwest	83	16	8	8	68	13	13	.6	.3	ø	21	9	9	3.5	33	26	1.4	5	.1
Pacific Southwest	112	21	10	11	91	14	13	.6	.7	.1	30	11	13	5.7	46	36	1.8	8	.3
Road																			
United States	$ 898	$ 176	$ 84	$ 91	$ 722	$ 197	$ 188	$ 7.9	$ 1.4	$ -	$ 167	$ 138	$ 20	$ 8.8	$ 359	$ 340	$ 2.8	$ 16	$ -
Eastern	398	78	37.	40	320	81	77	3.4	.6	-	75	63	9	3.9	162	153	1.3	8	-
Southern	154	30	15	16	124	38	36	1.4	.2	-	29	25	3	.7	57	55	.5	2	-
Western	346	68	32	35	179	78	74	3.2	.5	-	62	50	7	4.2	139	132	1.1	6	-
New England	37	7	3	4	30	9	8	.3	.1	-	6	5	1	.3	15	14	.1	1	-
Trunk Line	172	34	16	18	139	32	30	1.4	.3	-	34	30	3	1.2	73	69	.4	3	-
Central	188	37	18	19	151	41	39	1.7	.2	-	36	29	5	2.3	74	70	.7	3	-
Pocahontas	48	9	5	5	38	12	11	.6	ø	-	10	8	1	.1	17	16	.1	1	-
Southeastern	106	21	10	11	86	26	25	.7	.2	-	19	16	2	.6	40	38	.3	2	-
Western Trunk Line	154	30	14	16	124	35	33	1.6	.3	-	27	22	3	1.9	62	59	.5	3	-
Southwestern	82	16	8	8	66	20	19	.7	.1	-	14	11	2	1.0	32	29	.1	2	-
Pacific Northwest	49	10	5	5	39	11	11	.5	ø	-	9	7	1	.6	19	19	.2	1	-
Pacific Southwest	62	12	6	6	50	12	11	.5	.1	-	12	9	2	.7	26	25	.3	1	-
Yard																			
United States	$1,068	$ 196	$ 94	$ 102	$ 872	$ 57	$ 40	$ 4.2	$ 8.0	$ 4.4	$ 364	$ 54	$ 232	$77.9	$ 451	$ 271	$29.0	$ 139	$12.0
Eastern	579	106	51	55	473	29	20	2.3	3.8	2.2	191	34	114	43.8	253	155	16.0	71	10.9
Southern	153	30	14	15	124	9	6	.7	1.3	.8	50	7	40	3.3	64	39	3.8	21	.6
Western	336	60	29	31	275	19	14	1.3	2.9	1.5	123	13	79	30.8	133	77	9.3	47	.5
New England	43	8	4	4	35	3	2	.1	.4	.1	13	2	7	4.1	19	11	.9	7	ø
Trunk Line	259	48	23	25	211	11	7	.9	1.6	1.4	82	17	49	16.6	118	69	6.9	32	9.5
Central	277	50	24	26	227	14	11	1.2	1.6	.6	96	15	59	23.1	116	75	8.2	32	1.4
Pocahontas	46	9	4	5	37	3	2	.3	.3	.5	15	2	13	Cr .4	19	12	1.4	5	.5
Southeastern	108	21	10	11	87	6	5	.4	1.0	.3	35	5	27	3.7	46	27	2.3	16	.1
Western Trunk Line	180	33	16	17	147	11	8	.8	1.4	1.3	64	8	43	14.1	71	42	5.2	24	ø
Southwestern	72	12	6	6	59	4	3	.2	.6	.1	27	3	16	8.7	28	15	1.4	11	.1
Pacific Northwest	34	6	3	3	28	2	2	.1	.2	ø	13	1	8	3.0	13	7	1.2	5	.1
Pacific Southwest	50	9	4	5	41	2	1	.1	.6	.1	19	2	12	5.0	20	11	1.4	7	.3

* All figures in millions of dollars. # Does not include $18,000,000 loss and damage claims.

Analysis 68.1 Grouping of Primary Cost Accounts

COST GROUP FUNCTION DISTRIBUTION	INTERSTATE COMMERCE COMMISSION PRIMARY ACCOUNTS RAILWAY	WATERWAY	PIPE LINES
MAINTENANCE			
Roadway	202-226,inc., 229,230. 249-272,inc.#		202-204, inc., 210-212, inc., 252-254, inc., 260-262, inc.#
Power			
Structures	231-236, inc.#		205#, 255#
Locomotives	308-313,inc.,323-325,inc.ø		
Cars			
Owned	314-316,inc.ø	WE 1-11,inc.	
Hired	503, 536	WE 56-58,inc., WR 11-12 inc.	
Station	227, 228#	WE 15, 16ø	206,207,256,257#
Wharves & Docks	241-244,inc.#	WE 13, 14ø	
TRANSPORTATION			
Train			
Movement	372,392-401,inc.,404-406ø	WE 24-26,inc.,32-33ø	272,273,277ø
Supplies	402ø	WE 27-31,inc.ø	
Assemblage			
Movement	372,375,377-389,inc.,392-401,inc.,404-406,inc.ø	WE 39,40,41,43ø	222,223,227ø
Supplies	402ø	WE 42ø	
Floatage	408ø		
Station Agency	373,374,376ø	WE 35-38,inc.ø	224,225,274,275ø
OTHER OPERATIONS			
Water Line Operations	431-433,inc.		
Miscellaneous and Unassigned	237-240,inc.,245,246,280, 317-322,inc.,338,419,442, 443-446,inc.		
OVERHEAD			
Administration			
Traffic	351-359,inc.	WE 17-23,inc.	
General	451-462,inc.	(WE 48-51,inc. (WE 53-55 inc.	(209,231-239,inc.,259 (281-289,inc.
Taxes	532,535	WI 16	412

NOTE: The accounts listed are the direct accounts, in addition to which the following supervisory accounts were apportioned among the direct cost groups in proportion to the charges in the direct accounts:

# Maintenance of Way	201,273-279,inc., 326-328,inc.	WE 12	201,213,214,251,263, 264
ø Maintenance of Equipment	301-307,inc., 329-337,inc.		
ø Transportation, including freight service proportion of unassigned expenses	247,248,371,390,391, 407,410-417,inc., 420	WE 34 WE 44-47 inc. and 52	208,221,226,228,258, 271,276,278

Analysis 70.1 Extent of Carrier Operations - 1932

	RAIL	WATER			PIPE
		CARLOT	CARGO		
		COMMON	CONTRACT	PRIVATE	
AGGREGATE STATISTICS					
Reporting Carriers	160	103	33	29	46
Route Miles (Thousands)	243	-	-	-	93
Main	167	171	57	37	51
Branch	76	-	-	-	41
Schedules* (Thousands)	5,333	109	2	2	-
Schedule Miles (Thousands)	391,053	20,684	2,670	1,796	-
Schedule Hours (Thousands)	24,407	2,811	397	323	-
Vehicles Originated (Thousands)	27,147	-	-	-	-
Tons Originated (Thousands)	646,223	18,769	20,240	8,209	82,828ø
Locomotive Miles (Millions)	398	-	-	-	-
Vehicle Miles - Total (Millions)	17,066	-	-	-	-
Loaded	10,333	-	-	-	-
Empty	6,733	-	-	-	-
Ton Miles (Billions)					
Gross#	747	-	-	-	-
Vehicle	648	-	-	-	-
Net Ton Miles					
Railroad distance	236	18	15	4	-
Water distance	-	33	16	4	32ø
Equated	456	-	-	-	-
Capacity∅	-	74	24	17	-
AVERAGE STATISTICS					
Density per					
Route Mile					
Schedules	.22	.64	.02	.057	-
Schedule Miles	1,610	121	47	486	-
Locomotive Miles	1,637	-	-	-	-
Vehicle Miles - Loaded	42,554	-	-	-	-
Gross Ton Miles - Total (Thousands)	3,075	-	-	-	-
Vehicle Ton Miles (Thousands)	2,670	-	-	-	-
Net Ton Miles (Thousands)					
Railroad distance	970	106	261	1,094	-
Water distance	-	192	277	1,171	345
Equated Ton Miles (Thousands)	1,877	-	-	-	-
Density Per					
Schedule Mile					
Locomotive Miles	1.2	-	-	-	-
Vehicle Miles - Loaded	26.42	-	-	-	-
Gross Ton Miles - Total	1,910	-	-	-	-
Vehicle	1,660	-	-	-	-
Net Ton Miles					
Railroad distance	600	881	5,371	2,321	-
Water distance		1,594	5,680	2,442	-
Equated Ton Miles	1,170	-	-	-	-
Density Per					
Vehicle Mile					
Gross Ton Miles	72.27	-	-	-	-
Vehicle Ton Miles	62.75	-	-	-	-
Net Ton Miles					
Railroad distance	22.80	-	-	-	-
Water distance		-	-	-	-
Equated Ton Miles	44.11	-	-	-	-
Density Per					
Schedule Hour					
Gross Ton Miles	30,600	-	-	-	-
Vehicle Ton Miles	26,570	-	-	-	-
Net Ton Miles					
Railroad distance	9,650	6,457	32,411	12,875	-
Water distance		11,706	39,572	13,486	-
Equated Ton Miles	18,670	-	-	-	-

* Train, vessel trips and pipe line runs. # Including locomotive.

∅ Vessel capacity based on runs reported for 1932.

ø Actual pipe distance. Crude Petroleum 30 billion, Petroleum Products 2 billion, Crude Petroleum tons 79,376, Petroleum Products 3,456.

ANALYSIS 70.2 Extent of Water Operations - Carlot (Common) Carriers - 1932

	UNITED STATES	ATLANTIC COAST	ATLANTIC GULF	INTER-COASTAL	INLAND WATERS	GREAT LAKES	PACIFIC COAST
AGGREGATE STATISTICS							
Reporting Carriers	103	32	9	11	8	17	26
Route Miles	-	-	-	-	-	-	-
Main	171,192	22,387	26,139	88,127	9,489	10,951	14,099
Branch	-	xxx	xxx	xxx	xxx	xxx	xxx
Schedules*	108,851	14,262	1,142	434	676	12,623	79,714
Schedule Miles (thousands)	20,684	5,689	2,834	5,912	846	1,882	3,518
Schedule Hours (thousands)	2,811	715	283	803	221	235	551
Vehicles Originated	-	-	-	-	-	-	-
Locomotive Miles	-	-	-	-	-	-	-
Vehicle Miles - Total	-	-	-	-	-	-	-
Loaded	-	-	-	-	-	-	-
Empty	-	-	-	-	-	-	-
Ton Miles	-	-	-	-	-	-	-
Gross	-	-	-	-	-	-	-
Vehicle	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance (millions)	18,132	1,764	2,714	10,001	1,481	1,144	1,028
Water Distance (millions)	32,872	1,989	3,390	22,880	2,367	1,284	962
Capacity (millions)	74,255	9,080	11,617	41,506	4,882	5,053	2,117
Tons Originated	18,769	4,680	2,286	3,917	2,292	3,000	2,594
AVERAGE STATISTICS							
Density per							
Route Mile							
Schedules	.64	.637	.044	.005	.071	1.154	5.654
Schedule Miles	1.21	254.12	108.42	67.09	89.16	171.86	249.52
Locomotive Miles	-	-	-	-	-	-	-
Vehicle Miles - Loaded	-	-	-		-	-	-
Gross Ton Miles - Total	-	-	-	-	-	-	-
Vehicle Ton Miles	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance	105,916	78,832	103,830	113,495	156,113	104,544	72,943
Water Distance	192,018	88,862	129,691	259,634	249,523	117,288	68,286
Density per							
Schedule Mile							
Locomotive Miles	-	-	-	-	-	-	-
Vehicle Miles - Loaded	-	-	-	-	-	-	-
Gross Ton Miles - Total	-	-	-	-	-	-	-
Vehicle	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance	881	310	957	1,691	1,749	608	292
Water Distance	1.594	349	1,196	3,869	2,797	682	275
Density per							
Vehicle Mile							
Gross Ton Miles	-	-	-	-	-	-	-
Vehicle Ton Miles	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance	-	-	-	-	-	-	-
Water Distance	-	-	-	-	-	-	-
Equated Ton Miles							
Density per							
Schedule Hour							
Gross Ton Miles	-	-	-	-	-	-	-
Vehicle Ton Miles	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance	6,457	2,467	9,584	12,448	6,674	4,861	1,863
Water Distance	11,706	2,781	11,972	28,477	10,667	5,453	1,744

* Vessel trips.

ANALYSIS 70.3 Extent of Water Operations - Cargo (Contract and Private) Carriers - 1932

	UNITED STATES	ATLANTIC COAST	ATLANTIC GULF	INTER-COASTAL	INLAND WATERS	GREAT LAKES	PACIFIC COAST
AGGREGATE STATISTICS							
Reporting Carriers	65	13	2	2	5	36	7
Route Miles	-	-	-	-	-	-	-
Main	92,885	18,513	9,150	6,100	4,110	49,426	5,586
Branch	-	xxx	xxx	xxx	xxx	xxx	xxx
Schedules*	3,952	518	38	16	230	2,180	970
Schedule Miles (thousands)	4,463	547	161	192	245	2,876	442
Schedule Hours (thousands)	716	90	31	34	67	360	134
Vehicles Originates	-	-	-	-	-	-	-
Locomotive Miles	-	-	-	-	-	-	-
Vehicle Miles - Total	-	-	-	-	-	-	-
Loaded	-	-	-	-	-	-	-
Empty	-	-	-	-	-	-	-
Ton Miles	-	-	-	-	-	-	-
Gross	-	-	-	-	-	-	-
Vehicls	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance (millions)	18,944	2,143	859	136	349	15,391	66
Water Distance (millions)	20,051	2,179	986	289	643	15,888	66
Capacity (millions)	40,818	3,864	1,828	903	1,400	32,423	400
Tons Originated	28,449	3,372	519	48	586	23,762	162
AVERAGE STATISTICS							
Density per							
Route Mile							
Schedules	.043	.014	.003	.001	.052	.023	.066
Schedule Miles	.48	29.55	17.60	31.48	59.61	58.19	79.13
Locomotive Miles	-	-	-	-	-	-	-
Vehicle Miles - Loaded	-	-	-	-	-	-	-
Gross Ton Miles - Total	-	-	-	-	-	-	-
Vehicle Ton Miles	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance	203,951	115,769	93,975	22,406	85,062	311,406	11,856
Water Distance	215,869	117,723	107,821	47,537	156,673	321,456	11,856
Density per							
Schedule Mile							
Locomotive Miles	-	-	-	-	-	-	-
Vehicls Miles - Loaded	-	-	-	-	-	-	-
Gross Ton Miles - Total	-	-	-	-	-	-	-
Vehicle	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance	4,245	3,912	5,334	708	1,421	5,350	149
Water Distance	4,493	3,978	6,120	1,504	2,618	5,523	149
Density per							
Vehicle Mile							
Gross Ton Miles	-	-	-	-	-	-	-
Vehicle Ton Miles	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance	-	-	-	-	-	-	-
Water Distance	-	-	-	-	-	-	-
Equated Ton Miles							
Density per							
Schedule Hour							
Gross Ton Miles	-	-	-	-	-	-	-
Vehicle Ton Miles	-	-	-	-	-	-	-
Net Ton Miles							
Railroad Distance	26,458	23,655	27,224	3,954	5,150	42,711	493
Water Distance	28,004	24,055	31,236	8,390	9,487	44,090	493

* Vessel trips.

ANALYSIS 70.4 Extent of Rail Operations - 1932

	UNITED STATES	NEW ENGLAND	CENTRAL EAST	POCA-HONTAS	SOUTH-EAST	NORTH-WEST	SOUTH-WEST
AGGREGATE STATISTICS							
Reporting Carriers*	160	9	55	4	30	22	40
Route Miles (thousands)	243	7	53	6	40	68	69
Main	167	5	42	5	30	42	43
Branch	76	2	11	1	10	26	26
Schedules (thousands)	5,333	248	2,324	295	634	1,123	709
Schedule Hours (thousands)	24,407	852	9,415	1,303	3,098	5,838	3,901
Schedule Miles (millions) #	391	12	145	17	54	97	65
Locomotive Miles (millions) #	398	13	148	17	55	98	67
Vehicles Originated (thousands) ø	27,147	1,348	10,788	1,679	4,166	4,329	4,837
Vehicle Miles - Total (millions)	17,066	506	6,868	1,047	2,019	3,572	3,054
Loaded	10,333	346	4,340	558	1,151	2,338	1,600
Empty #	6,733	160	2,528	489	868	1,234	1,454
Tons Originated (millions) #	646	14	273	76	85	90	108
Ton Miles (billions)							
Net (revenue)	236	6	107	21	26	45	29
Equated	456	12	208	41	50	88	57
Vehicle	648	18	282	45	70	140	94
Gross	747	21	322	50	82	163	109
AVERAGE STATISTICS							
Density per							
Route Mile							
Schedules	22	34	44	48	16	16	10
Schedule Miles	1,610	1,709	2,731	2,790	1,353	1,419	964
Locomotive Miles	1,637	1,737	2,776	2,836	1,376	1,443	980
Vehicle Miles - Loaded	42,554	47,779	81,620	91,540	28,993	34,265	23,401
Net Ton Miles (thousands)	970	833	2,020	3,491	655	666	431
Equated Ton Miles (thousands)	1,877	1,612	3,907	6,753	1,268	1,287	834
Vehicle Ton Miles (thousands)	2,670	2,520	5,298	7,303	1,773	2,050	1,369
Gross Ton Miles (thousands)	3,075	2,949	6,050	8,194	2,080	2,386	1,597
Schedule Mile							
Locomotive Miles	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Vehicle Miles - Loaded	26,420	27,960	29,890	32,810	21,420	24,140	24,280
Net Ton Miles	600	490	740	1,250	480	470	450
Equated Ton Miles	1,170	940	1,430	2,420	940	910	870
Vehicle Ton Miles	1,660	1,470	1,940	2,620	1,310	1,440	1,420
Gross Ton Miles	1,910	1,730	2,220	2,940	1,520	1,680	1,660
Vehicle Mile - Loaded							
Net Ton Mile	22.80	17.44	24.75	38.14	22.61	19.42	18.42
Equated Ton Mile	44.11	33.73	47.87	73.77	43.73	37.57	35.64
Vehicle Ton Miles	62.75	52.74	64.91	79.78	61.16	59.84	58.52
Gross Ton Miles	72.27	61.73	74.12	89.51	71.94	69.64	68.23
Schedule Hour							
Net Ton Miles	9,650	7,080	11,410	16,350	8,400	7,780	7,560
Equated Ton Miles	18,670	13,700	22,060	31,630	16,250	15,040	14,620
Vehicle Ton Miles	26,570	21,420	29,920	34,210	22,720	23,960	24,010
Gross Ton Miles	30,600	25,060	34,170	38,380	26,390	27,880	27,990

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* Includes 13 Switching and Terminal Companies.

# From Interstate Commerce Commission.

ø Carload Cars from Interstate Commerce Commission; L.C.L. Cars from A.R.A., distributed to territories on the percentage distribution of L.C.L. Tons from the I.C.C.

Analysis 70.5 Service Units of Rail Operating Districts by States - 1932

	ROUTE MILES		SCHEDULES			LOADED	TON MILES			
	MAIN	BRANCH	NUMBER (000)	MILES (000)	HOURS (000)	CAR MILES (000,000)	NET (000,000)	EQUATED (000,000)	VEHICLE (000,000)	GROSS (000,000)
UNITED STATES	166,864	79,957	5,333	391,053	24,407	10,333	235,638	455,788	648,393	746,772
NEW ENGLAND	5,200	2,433	248	12,376	852	346	6,034	11,672	18,250	21,359
06 Connecticut	1,118	264	65	2,981	188	101	1,740	3,365	5,273	6,146
23 Maine	1,393	894	58	3,172	210	69	1,315	2,542	3,893	4,563
25 Massachusetts	1,317	532	88	4,053	298	109	1,905	3,686	5,807	6,808
34 New Hampshire	435	641	8	472	35	15	276	534	799	922
45 Rhode Island	239	43	12	653	42	23	367	711	1,195	1,389
53 Vermont	698	59	17	1,045	79	29	431	834	1,283	1,531
TRUNK LINE	14,346	7,224	1,263	59,028	4,234	1,881	48,246	93,321	122,280	139,836
07 Delaware	175	276	10	754	59	19	341	659	1,122	1,275
24 Maryland	803	296	50	3,014	232	94	2,442	4,724	6,093	7,029
35 New Jersey	1,120	714	118	4,587	323	118	3,361	6,501	8,015	9,135
37 New York	6,598	1,278	362	20,642	1,337	704	15,323	29,640	43,206	49,484
44 Pennsylvania	5,650	4,660	723	30,031	2,283	946	26,779	51,797	63,844	72,913
CENTRAL	32,534	5,825	1,061	86,166	5,181	2,459	59,148	114,407	159,382	181,828
13 Illinois	10,182	2,351	346	27,949	1,608	728	16,353	31,631	46,228	52,700
15 Indiana	4,624	409	140	12,358	690	368	7,982	15,440	23,275	26,433
26 Michigan	5,654	1,637	152	11,884	702	288	5,899	11,409	17,615	20,461
41 Ohio	12,074	1,428	423	33,975	2,181	1,075	28,914	55,927	72,264	82,234
POCAHONTAS	6,339	1,406	295	17,023	1,302	558	21,300	41,201	44,555	49,990
54 Virginia	3,767	396	124	9,059	568	289	10,542	20,391	22,438	25,218
57 West Virginia	2,572	1,010	171	7,964	734	269	10,758	20,810	22,117	24,772
SOUTHEASTERN	25,537	9,314	634	53,721	3,098	1,151	26,018	50,326	70,383	81,750
01 Alabama	4,285	1,241	91	8,078	455	160	3,338	6,457	9,307	11,001
09 Florida	2,679	2,040	60	4,364	238	50	1,174	2,271	3,953	4,855
10 Georgia	5,229	2,122	97	9,445	520	189	3,319	6,421	11,027	12,920
20 Kentucky	2,899	912	130	10,467	588	280	9,019	17,444	20,040	22,493
28 Mississippi	2,814	355	65	4,670	304	106	2,054	3,973	5,951	6,738
38 North Carolina	3,736	1,480	94	8,854	509	207	3,613	6,989	10,796	12,763
46 South Carolina	1,393	146	16	1,589	96	30	592	1,144	1,658	1,987
48 Tennessee	2,502	1,018	81	6,254	388	129	2,909	5,627	7,651	8,993
WESTERN TRUNK LINE	35,481	23,720	922	77,458	4,635	1,808	35,080	67,854	108,130	125,502
16 Iowa	6,421	3,661	190	16,631	925	354	6,651	12,864	21,470	25,217
18 Kansas	4,798	4,747	156	13,643	772	334	6,646	12,856	20,227	23,356
27 Minnesota	5,594	2,403	88	7,669	503	172	3,824	7,397	10,482	12,133
29 Missouri	4,986	2,706	154	12,470	694	315	6,038	11,679	18,849	21,645
32 Nebraska	3,481	3,981	127	10,018	595	254	4,501	8,705	15,055	17,538
40 North Dakota	2,978	2,702	48	4,499	277	93	1,884	3,644	5,327	6,232
47 South Dakota	2,102	1,312	35	3,307	226	59	1,198	2,317	3,564	4,235
58 Wisconsin	5,121	2,208	124	9,221	643	227	4,338	8,392	13,156	15,146
SOUTHWESTERN	23,613	12,051	467	41,247	2,377	902	17,746	34,326	55,307	64,167
03 Arkansas	2,883	1,692	73	6,318	350	149	3,029	5,859	8,712	9,731
22 Louisiana	2,749	1,486	62	4,701	281	92	2,085	4,033	5,712	6,464
36 New Mexico	1,671	1,179	26	3,277	171	92	1,680	3,249	5,822	6,785
42 Oklahoma	4,484	1,639	83	6,870	437	136	2,883	5,576	8,692	10,221
50 Texas	11,826	6,055	223	20,081	1,138	433	8,069	15,609	26,369	30,966
PACIFIC NORTHWEST	11,212	8,610	200	19,374	1,204	530	10,328	19,978	31,763	37,313
12 Idaho	1,154	1,513	43	2,813	175	70	1,399	2,707	4,178	4,959
31 Montana	3,758	1,933	43	4,875	301	159	3,177	6,144	9,549	11,128
43 Oregon	1,529	2,256	19	2,852	188	56	1,142	2,209	3,214	3,880
56 Washington	3,496	2,738	55	4,852	346	96	2,146	4,151	5,963	7,177
59 Wyoming	1,275	170	40	3,982	194	149	2,464	4,767	8,859	10,169
PACIFIC SOUTHWEST	12,602	5,374	243	24,660	1,524	698	11,738	22,703	38,343	45,027
02 Arizona	1,057	675	17	2,977	163	96	1,633	3,158	6,187	7,120
04 California	4,719	2,602	99	10,504	688	268	5,055	9,778	16,110	19,261
05 Colorado	4,249	1,090	86	6,175	395	152	1,689	3,266	5,156	6,139
33 Nevada	1,470	643	13	2,780	146	116	2,160	4,178	7,089	7,919
52 Utah	1,107	364	28	2,224	132	66	1,201	2,323	3,801	4,588

Analysis 70.6 Rail Traffic Density per Route Mile (by States) - 1932

OPERATING DISTRICT	NUMBER OF SERVICE UNITS PER ROUTE MILE							
	SCHEDULES			LOADED CAR MILES (000)	TON MILES			
	NUMBER	MILES	HOURS		NET (000)	EQUATED (000)	VEHICLE (000)	GROSS (000)
UNITED STATES	21.96	1,610.71	100.53	43	970	1,877	2,670	3,075
NEW ENGLAND	32.50	1,621.40	111.64	45	791	1,530	2,391	2,798
08 Connecticut	47.21	2,157.70	136.17	73	1,259	2,435	3,817	4,448
23 Maine	25.39	1,387.47	92.08	30	575	1,112	1,703	1,995
25 Massachusetts	47.30	2,192.52	161.12	59	1,031	1,994	3,141	3,682
34 New Hampshire	7.56	438.62	32.22	14	257	497	742	857
45 Rhode Island	42.81	2,303.60	146.94	80	1,296	2,507	4,216	4,902
53 Vermont	22.62	1,380.54	104.79	38	570	1,103	1,696	2,023
TRUNK LINE	58.54	2,741.33	196.64	87	2,241	4,335	5,679	6,494
07 Delaware	21.67	1,672.95	131.53	42	757	1,464	2,492	2,830
24 Maryland	45.71	2,743.11	210.87	85	2,223	4,300	5,545	6,397
35 New Jersey	64.27	2,500.28	176.15	64	1,832	3,544	4,369	4,979
37 New York	46.91	2,620.79	169.79	89	1,945	3,762	5,485	6,283
44 Pennsylvania	70.32	2,923.46	222.22	92	2,607	5,043	6,215	7,098
CENTRAL	27.66	2,246.27	135.05	64	1,542	2,983	4,155	4,740
13 Illinois	27.64	2,229.92	128.26	58	1,305	2,524	3,688	4,205
15 Indiana	27.75	2,455.30	137.08	73	1,586	3,068	4,624	5,252
26 Michigan	20.92	1,629.86	96.32	40	809	1,565	2,416	2,806
41 Ohio	31.35	2,516.39	161.51	80	2,141	4,141	5,352	6,090
POCAHONTAS	38.11	2,197.75	168.16	72	2,759	5,319	5,752	6,454
54 Virginia	29.83	2,175.90	136.50	69	2,532	4,898	5,389	6,057
57 West Virginia	47.74	2,223.27	204.97	75	3,004	5,811	6,175	6,916
SOUTHEASTERN	18.19	1,541.45	88.89	33	747	1,445	2,020	2,346
01 Alabama	16.40	1,461.87	82.42	29	604	1,168	1,684	1,991
09 Florida	12.70	924.89	50.51	11	249	482	838	1,029
10 Georgia	13.18	1,284.97	70.73	26	452	874	1,500	1,758
20 Kentucky	34.16	2,747.04	154.38	73	2,367	4,578	5,259	5,903
28 Mississippi	20.46	1,473.67	95.95	33	648	1,253	1,878	2,126
38 North Carolina	18.11	1,697.14	97.46	40	693	1,340	2,070	2,447
46 South Carolina	10.65	1,032.55	62.37	19	384	743	1,077	1,291
48 Tennessee	22.94	1,776.17	110.03	37	826	1,598	2,173	2,554
WESTERN TRUNK LINE	15.57	1,308.40	78.29	31	593	1,147	1,827	2,120
16 Iowa	18.80	1,649.63	91.71	36	660	1,277	2,130	2,501
18 Kansas	16.39	1,429.36	80.92	35	696	1,346	2,119	2,447
27 Minnesota	11.04	958.92	62.85	21	478	925	1,311	1,517
29 Missouri	20.03	1,621.14	90.26	41	785	1,518	2,450	2,814
32 Nebraska	17.00	1,342.61	79.74	34	603	1,166	2,018	2,351
40 North Dakota	6.52	792.11	48.86	16	332	642	938	1,097
47 South Dakota	10.22	968.50	66.10	17	351	679	1,044	1,240
58 Wisconsin	16.87	1,258.23	87.71	31	592	1,145	1,795	2,067
SOUTHWESTERN	13.08	1,156.55	66.66	25	498	963	1,551	1,799
03 Arkansas	15.96	1,380.97	76.61	33	662	1,280	1,904	2,127
22 Louisiana	14.58	1,109.85	66.31	22	492	952	1,349	1,526
36 New Mexico	9.03	1,149.98	60.03	32	589	1,139	2,043	2,381
42 Oklahoma	13.63	1,121.98	71.31	22	471	911	1,420	1,669
50 Texas	12.48	1,123.07	63.65	24	451	872	1,475	1,732
PACIFIC NORTHWEST	10.12	977.46	60.74	27	521	1,008	1,602	1,882
12 Idaho	16.20	1,054.44	65.67	26	524	1,013	1,566	1,859
31 Montana	7.60	856.62	52.86	28	558	1,079	1,678	1,955
43 Oregon	5.13	753.75	49.68	15	302	584	849	1,025
56 Washington	8.86	778.37	55.46	15	344	665	957	1,151
59 Wyoming	27.31	2,756.36	134.39	103	1,706	3,300	6,132	7,039
PACIFIC SOUTHWEST	13.50	1,371.83	84.77	39	653	1,263	2,133	2,505
02 Arizona	9.57	1,719.49	94.15	55	933	1,824	3,574	4,113
04 California	13.56	1,434.80	93.95	37	690	1,335	2,200	2,631
05 Colorado	16.18	1,156.42	73.96	28	316	611	966	1,150
33 Nevada	6.17	1,315.81	69.22	55	1,022	1,977	3,355	3,748
52 Utah	18.65	1,511.70	89.57	45	817	1,580	2,584	3,119

Analysis 70.7 Rail Track Facilities by Operating Districts

	MILES OF TRACK OPERATED							
	ROAD	SECOND	THIRD	FOURTH	OTHER	INDUSTRIAL	YARDS & SIDINGS	EQUATED TRACK MILES
UNITED STATES	242,820.65	36,481.61	3,155.33	2,201.81	356.31	21,632.70	100,852.64	402,434.01
EASTERN DISTRICT	67,562.98	20,437.13	2,829.51	2,082.31	188.74	8,910.27	44,810.32	146,714.58
SOUTHERN DISTRICT	42,596.32	5,240.19	162.15	32.96	134.02	3,898.63	14,919.46	49,858.67
WESTERN DISTRICT	132,661.35	10,804.29	163.67	86.54	33.55	8,823.80	41,122.86	205,860.76
NEW ENGLAND	7,633.10	1,751.03	227.94	138.21	8.39	763.15	4,111.72	11,774.09
06 Connecticut	1,381.55	447.68	91.53	85.95	3.21	230.71	1,052.81	2,528.41
23 Maine	2,286.69	164.37	1.38	1.38	-	102.89	657.69	2,801.38
25 Massachusetts	1,848.70	869.40	105.95	43.54	5.18	234.37	1,569.23	3,569.75
34 New Hampshire	1,075.87	122.82	-	-	-	33.22	393.82	1,387.65
45 Rhode Island	283.43	145.52	29.08	7.34	-	118.96	170.28	573.60
53 Vermont	756.86	1.24	-	-	-	43.00	267.89	913.30
TRUNK LINE	21,570.43	8,567.51	1,660.99	1,311.85	54.56	2,864.20	16,980.09	39,760.86
07 Delaware	450.47	174.58	-	-	-	-	204.56	692.41
24 Maryland	1,098.83	461.92	50.52	32.29	-	220.12	812.08	1,053.73
35 New Jersey	1,834.59	838.10	176.39	149.94	21.64	224.16	1,925.17	3,858.13
37 New York	7,876.35	3,208.52	556.60	477.72	26.63	872.53	5,605.10	14,553.83
44 Pennsylvania	10,310.19	3,884.39	877.48	651.90	6.29	1,547.46	8,433.18	19,602.76
CENTRAL	38,359.45	10,118.59	940.58	632.25	125.79	5,282.85	23,718.51	95,179.63
13 Illinois	12,533.22	3,226.81	307.79	181.18	111.56	2,038.84	7,777.47	54,046.71
15 Indiana	5,033.18	1,316.11	10.22	4.62	-	441.26	2,597.65	6,971.78
26 Michigan	7,291.10	1,560.59	27.92	9.84	-	1,058.63	4,159.56	11,178.87
41 Ohio	13,501.95	4,015.08	594.65	436.61	14.23	1,744.12	9,183.83	22,982.27
POCAHONTAS	7,745.44	1,688.80	137.73	24.96	-	1,009.10	3,407.54	11,116.72
54 Virginia	4,163.64	888.96	18.94	8.30	-	408.08	1,855.79	5,710.30
57 West Virginia	3,581.80	799.84	118.79	16.66	-	601.02	1,551.75	5,406.42
SOUTHEASTERN	34,850.88	3,551.39	24.42	8.00	134.02	2,889.53	11,511.92	38,741.95
01 Alabama	5,525.94	379.44	.36	.38	23.68	638.14	1,916.49	7,123.51
09 Florida	4,718.76	458.27	-	-	-	271.69	1,386.03	3,600.33
10 Georgia	7,350.34	418.01	2.66	1.24	24.01	445.77	1,966.49	7,147.13
20 Kentucky	3,810.34	936.76	18.74	5.96	33.18	457.85	1,823.06	5,746.52
28 Mississippi	3,168.88	271.39	-	-	53.15	243.85	1,191.29	4,146.09
38 North Carolina	5,216.78	810.65	.63	.42	-	344.72	1,463.88	4,582.27
46 South Carolina	1,538.73	133.29	2.03	-	-	118.44	446.50	1,929.46
48 Tennessee	3,521.11	143.58	-	-	-	369.07	1,318.18	4,466.64
WESTERN TRUNK LINE	59,200.40	5,402.14	131.92	69.17	9.84	3,875.94	17,137.92	114,117.94
16 Iowa	10,081.82	1,257.09	9.41	8.68	9.84	449.70	2,258.38	12,717.89
18 Kansas	9,544.52	532.58	25.44	5.34	-	628.44	2,630.97	51,294.55
27 Minnesota	7,997.11	814.40	32.10	25.55	-	498.57	3,222.84	10,550.66
29 Missouri	7,692.30	793.92	41.63	10.58	-	518.53	2,850.02	10,053.47
32 Nebraska	7,461.44	521.36	2.69	2.70	-	626.90	1,782.78	9,087.76
40 North Dakota	5,680.28	129.06	-	-	-	68.64	1,149.35	6,392.81
47 South Dakota	3,414.50	198.11	-	-	-	90.07	554.34	3,895.20
58 Wisconsin	7,328.43	1,155.62	20.65	16.32	-	995.09	2,689.24	10,125.60
SOUTHWESTERN	35,664.21	835.31	7.09	.33	23.71	2,574.97	10,312.72	42,293.80
03 Arkansas	4,575.01	269.90	.61	-	20.69	234.24	1,452.63	5,255.57
22 Lousiana	4,235.45	159.03	6.11	-	3.02	556.59	1,281.55	5,252.95
36 New Mexico	2,850.14	66.96	-	-	-	130.12	876.46	3,403.84
42 Oklahoma	6,123.11	100.98	-	-	-	562.11	1,525.52	7,248.70
50 Texas	17,880.50	238.44	.37	.33	-	1,091.91	5,176.56	21,132.74
PACIFIC NORTHWEST	19,821.23	1,785.17	9.43	2.34	-	896.88	6,494.98	24,954.64
12 Idaho	2,667.75	169.48	-	-	-	74.74	857.06	3,269.65
31 Montana	5,690.87	301.02	2.14	2.34	-	124.31	1,724.17	6,858.72
43 Oregon	3,784.41	182.63	2.43	-	-	244.51	969.87	4,539.64
56 Washington	6,233.53	649.15	4.86	-	-	292.78	2,284.47	8,045.67
59 Wyoming	1,444.67	482.89	-	-	-	160.54	659.41	2,240.96
PACIFIC SOUTHWEST	17,975.51	2,781.67	15.23	14.70	-	1,476.01	7,177.24	24,494.38
02 Arizona	1,731.24	422.51	-	-	-	58.84	620.35	2,408.84
04 California	7,321.06	953.98	14.21	14.70	-	769.75	3,634.73	10,255.07
05 Colorado	5,339.34	625.23	-	-	-	448.46	1,703.10	6,915.30
33 Nevada	2,112.94	522.70	-	-	-	28.21	448.87	2,767.12
52 Utah	1,470.93	257.25	1.02	-	-	170.75	770.19	2,148.05

Analysis 70.8 Extent of Pipe Operations - 1932

	UNITED STATES	NORTH ATLANTIC	GREAT LAKES SOUTHWEST	SOUTHWEST GULF
Companies Reporting *	46	12	16	18
Miles Operated	92,783	14,723	44,782	33,278
Gross Investment	$763,941,669	$ 54,844,979	$319,191,416	$389,905,274
Net Investment #	$428,074,456	$ 21,323,190	$192,684,355	$214,066,911
Tons Originated	82,827,629	2,821,372	25,097,698	54,908,559
Ton-Miles Transported (Thousands)	31,512,188	1,058,504	21,011,641	9,442,043
REVENUES	$211,788,647	$ 9,294,350	$100,143,515	$102,350,782
Gathering Lines	$ 57,378,601	$ 2,779,919	$ 21,887,881	$ 32,710,801
Trunk Lines	$154,410,046	$ 6,514,431	$ 78,255,634	$ 69,639,981
COST	$101,964,942	$ 6,757,043	$ 48,485,271	$ 46,722,628
Gathering Lines - Total	27,992,151	2,781,042	12,255,359	12,955,750
Maintenance - Total	11,580,056	1,071,449	4,943,162	5,565,445
Repairs	2,889,490	491,937	1,283,637	1,113,916
Depreciation	7,090,655	471,208	3,026,068	3,593,379
Retirements	1,599,911	108,304	633,457	858,150
Transportation	9,198,215	1,118,220	3,644,367	4,435,628
Administration	2,808,528	297,503	1,230,113	1,280,912
Taxes	4,405,352	293,870	2,437,717	1,673,765
Trunk Lines - Total	73,972,791	3,976,001	36,229,912	33,766,878
Maintenance - Total	36,775,063	1,575,294	17,226,987	17,972,782
Repairs	5,448,616	486,346	2,806,157	2,156,113
Depreciation	30,396,224	1,055,254	13,932,013	15,408,957
Retirements	930,223	33,694	488,817	407,712
Transportation	18,702,654	1,433,980	9,052,426	8,215,248
Administration	6,848,658	557,038	2,948,175	3,343,445
Taxes	11,646,416	409,689	7,001,324	4,235,403
NET OPERATION INCOME	$109,823,705	$ 2,537,307	$ 51,658,244	$ 55,628,154
Gathering Lines	29,386,450	Dr. 1,123	9,632,522	19,755,051
Trunk Lines	80,437,255	2,538,430	42,025,722	35,873,103
RETURN ON GROSS INVESTMENT	14.38%	4.65%	15.57%	14.76%

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* Actual - not ratio.
# After depreciation.

Analysis 70.9 Petroleum Pipe Line Mileage by States

REGIONS AND STATES	MILES OF PIPE LINE OPERATED					
	ALL LINES		TRUNK LINES		GATHERING LINES	
	1931	1926	1931	1926	1931	1926
UNITED STATES - TOTAL	111,660	90,170	58,020	44,470	53,640	45,700
NORTH ATLANTIC - TOTAL	11,093	14,023	3,943	6,973	7,150	7,050
New York	820	1,910	210	1,200	610	710
Pennsylvania	10,050	11,600	3,510	5,260	6,540	6,340
New Jersey	190	480	190	480	-	-
Maryland	33	33	33	33	-	-
GREAT LAKES - TOTAL	15,395	14,108	7,905	6,168	7,490	7,940
Ohio	8,360	9,010	2,580	2,690	5,780	6,320
Michigan	485	138	325	138	160	-
Indiana	2,390	1,990	1,980	1,540	410	450
Illinois	4,160	2,970	3,020	1,800	1,140	1,170
SOUTHEAST - TOTAL	7,485	7,660	860	970	6,625	6,690
West Virginia	5,230	5,400	320	400	4,910	5,000
Kentucky	2,240	2,230	540	570	1,700	1,660
Tennessee	15	30	-	-	15	30
NORTHWEST - TOTAL	9,127	7,699	4,632	4,179	4,495	3,520
Iowa	98	77	98	77	-	-
Nebraska	404	404	404	404	-	-
Kansas	6,940	5,650	3,440	2,430	3,500	3,220
Colorado	110	68	20	8	90	60
Montana	275	150	60	130	215	20
Wyoming	1,300	1,350	610	1,130	690	220
SOUTHWEST - TOTAL	62,960	41,670	36,900	22,970	26,060	18,700
Missouri	4,170	2,490	4,170	2,490	-	-
Arkansas	1,660	1,770	820	830	840	940
Oklahoma	24,500	19,180	10,990	8,220	13,510	10,960
Texas	29,340	15,530	18,880	9,470	10,460	6,060
Louisiana	2,790	2,610	1,890	1,890	900	720
New Mexico	500	90	150	70	350	20
PACIFIC COAST - TOTAL	5,600	5,010	3,780	3,210	1,820	1,800
California	5,600	5,010	3,780	3,210	1,820	1,800

Analysis 70.10 Petroleum Pipe Line Mileage by Size of Line - 1931*

INSIDE DIAMETER OF PIPE (inches)	ALL LINES	TRUNK LINES	GATHERING LINES
TOTAL	111,660	58,020	53,640
2	21,450	-	21,450
3	9,970	-	9,970
3 plus to 4 minus	3,070	3,070	-
4	16,410	4,520	11,890
6	18,500	11,140	7,360
6 plus to 8 minus	2,970	-	2,970
8	26,290	26,290	-
10	8,270	8,270	-
12	4,700	4,700	-
Over 12	30	30	

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* Compiled from "Oil Pipe Lines in the United States", a release of the United States Department of Commerce, Bureau of Mines, May 3, 1932, pages 6 and 7.

Analysis 70.11 Integrated Refineries and Pipe Lines - Year 1931

REFINING COMPANY	PIPE LINE MILEAGE OPERATED ALL LINES AG-GRE-GATE	 ALL LINES % OF TOTAL	 TRUNK LINES AG-GRE-GATE	 TRUNK LINES % OF TOTAL	 GATHERING LINES AG-GRE-GATE	 GATHERING LINES % OF TOTAL
ALL COMPANIES - TOTAL	81,451	65%	49,187	83%	32,264	49%
Atlantic Refining Co. (Arkana Transit, Atlantic & Keystone Pipe Lines)	1,454	1	1,180	2	274	#
Barnsdall Corporation (Barnsdall & Great Lakes Pipe Lines)	455	#	-	-	455	1
Cities Service Co. (Arkansas, Crew Levick, Empire, Louisiana Oil & Texas-Empire Pipe Lines	2,933	2	1,874	3	1,059	2
Consolidated Oil Corporation (Alleghany, Consolidated, Fords Brook, Producers & Refiners, Sinclair Prairie & Union Pipe Lines)	15,019	12	7,022	12	7,997	12
Continental Oil Co. (Continental, Great Lakes & New Mexico Pipe Lines)	1,798	1	1,237	2	561	1
Gulf Oil Corporation of Pennsylvania (Gulf & Gulf Refining Pipe Lines)	7,261	6	5,174	9	2,087	3
Mid-Continent Petroleum Corporation (Cosden & Great Lakes Pipe Lines)	2,438	2	1,238	2	1,200	2
Ohio Oil Co. (Illinois & Pondera Pipe Lines)	5,772	5	1,948	3	3,824	6
Phillips Petroleum Co. (Bartex, Great Lakes, Independent & Phillips Pipe Lines)	1,747	1	772	1	975	1
Pure Oil Co. (Ajax, Great Lakes, Mountain State, Pure Oil & Pure Van Pipe Lines)	834	1	314	1	520	1
Shell Union Oil Corporation (Shell Oil & Shell Pipe Lines)	4,412	4	3,847	6	565	1
Socony-Vacuum Corporation (General Petroleum, General Magnolia Petroleum, Magnolia, Standard Oil, Vacuum Oil & White Eagle Oil Pipe Lines)	7,370	6	4,843	8	2,527	4
Standard Gas & Electric Co. (Deep Rock Oil Pipe Line)	430	#	-	-	430	1
Standard Oil Co. of California (Associated, Col-Tex Refining, Pasotex & Standard Oil Pipe Lines)	1,862	1	1,254	2	608	1
Standard Oil Co. of Indiana (Midwest Refining, Pondera, Stanolind Oil & Gas & Stanolind Pipe Lines)	7,713	6	4,452	7	3,261	5
Standard Oil Co. (New Jersey Corporation)(Ajax, Humble, Imperial, Oklahoma, Standard & Tuscarora Oil Pipe Lines)	12,163	10	8,660	15	3,503	5
Sun Oil Company (Sun, Sun Oil & Susquehanna Pipe Lines)	857	1	772	1	85	#
Texas Corporation (Texas, Texas-Empire Pipe Lines)	906	1	906	2	-	-
Tidewater Associated Oil Co. (Associated Oil, Associated, Branford Transit, Texas-Empire, Tidal Tidal Refining & Tidewater Pipe Lines)	4,046	3	2,553	6	1,493	2
Union Oil Association (Union Oil & Producers Transportation Pipe Lines)	1,981	2	1,141	2	840	1

Less than 1/2%

Analysis 70.12 Partly Integrated Refineries and Pipe Lines - Year 1931

REFINING COMPANY	PIPE LINE MILEAGE OPERATED ALL LINES AG-GRE-GATE	 ALL LINES % OF TOTAL	 TRUNK LINES AG-GRE-GATE	 TRUNK LINES % OF TOTAL	 GATHERING LINES AG-GRE-GATE	 GATHERING LINES % OF TOTAL
ALL COMPANIES - TOTAL	6,127	5%	1,689	3%	4,438	7%
American Republics Corp. - American Petroleum Co. (Texas)	79	#	69	#	10	#
Atlas Pipeline Co. (Inc.) - Total	295	#	144	#	151	#
Atlas Pipeline Co. (Inc.)	120	#	57	#	63	#
Spartan Refining Co. (Inc.)	175	#	87	#	88	#
British-American Oil Co. (Ltd.) - Toronto Pipe Line Co.	42	#	0	-	42	#
Houston Oil Co. of Texas - A third interest in certain lines owned by American Petroleum Co. (Texas)	26	#	23	#	3	#
Wm. F. Morgan (Inc.) Gulf Coast Pipe Line Co.	6	#	0	-	6	#
National Refining Co. - Total	935	1	-	-	935	1
National Pipe Line Co.	245	#	-	-	245	#
National Refining Co. of Oklahoma	690	1	-	-	690	1
South Penn Oil Co. - Bradford Transit Co.	776	1	-	-	776	1
Standard Oil Co. (Kansas) - Total	100	#	79	#	21	#
Standard Oil Co. (Ohio) - Ajax Pipe Line Co.	785	1	785	1	-	-
Texas Pacific Coal & Oil Co. of Texas - Thurber Pipe Line Co.	185	#	90	#	95	#
Valvoline Oil Co. - Total	1,668	1	355	1	1,313	2

Less than ½%

SECTION 70. EXTENT

Analysis 70.13 Independent Pipe Lines - Year 1931

REFINING COMPANY	PIPE LINE MILEAGE OPERATED					
	ALL LINES		TRUNK LINES		GATHERING LINES	
	AG-GRE-GATE	% OF TOTAL	AG-GRE-GATE	% OF TOTAL	AG-GRE-GATE	% OF TOTAL
ALL COMPANIES - Total	37,929	30%	8,563	14%	29,366	46%
NATIONAL TRANSIT COMPANY	3,801	3	1,313	2	2,488	4
"NORTHERN" GROUP - Total	9,031	7	2,888	5	6,143	9
Indiana Pipe Line Company	821	1	650	1	171	#
Buckeye Pipe Line Company	7,263	6	1,487	3	5,776	9
Northern Pipe Line Company	630	1	630	1	-	-
New York Transit Company	317	#	121	#	196	#
"SOUTHERN" GROUP - Total	8,008	6	737	1	7,271	11
Eureka Pipe Line Company	4,656	4	166	#	4,490	7
Southern Pipe Line Company	261	#	261	#	-	-
South West Pennsylvania Pipe Lines (Cumberland Pipe Line Company)	3,091	2	310	1	2,781	4
CRUDE TRANSIT COMPANY - Total	25	#	-	-	25	#
Elk Oil Company	20	#	-	-	20	#
Franklin Pipe Line Co. (Ltd.)	5	#	-	-	5	#

SECTION 71. DIRECTNESS

Directness of Rail Service - Summary of All Carload Terminated December 13, 1933

ORIGIN TERRITORY	CARS ORIGINATED	AVERAGE DEGREE OF CIRCUITY DESTINATION TERRITORIES												
		UNITED STATES	EASTERN	SOUTHERN	WESTERN	NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK	SOUTHWESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
UNITED STATES	49,105	11%	11%	11%	11%	12%	11%	10%	9%	12%	10%	15%	8%	9%
EASTERN	21,817	12	11	14	12	12	11	12	13	14	11	16	11	12
SOUTHERN	9,857	10	10	10	13	11	12	9	7	12	13	17	3	13
WESTERN	17,431	10	10	11	10	11	10	10	13	11	10	14	7	8
NEW ENGLAND	1,861	10	10	11	10	10	9	12	11	11	8	13	12	9
TRUNK LINE	9,972	11	11	14	14	12	10	12	16	13	11	16	13	17
CENTRAL	9,984	12	12	14	12	13	12	11	12	15	11	16	11	11
POCAHONTAS	3,584	9	10	6	13	12	12	8	5	12	13	18	5	-
SOUTHEASTERN	6,273	11	10	12	13	10	12	10	13	11	12	17	2	13
WESTERN TRUNK LINE	7,776	10	9	12	11	10	10	8	11	13	9	17	9	11
SOUTHWESTERN	4,498	14	14	13	14	14	13	14	23	13	18	13	15	5
PACIFIC NORTHWEST	2,305	8	10	11	6	27	11	10	0	11	6	10	4	4
PACIFIC SOUTHWEST	2,852	9	10	8	9	11	9	11	9	7	9	8	11	8

Analysis 71.2 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in United States and in New England Territories

	AVERAGE DEGREE OF CIRCUITY									
	DESTINATION TERRITORIES									
ORIGIN TERRITORY COMMODITY GROUP	UNITED STATES	NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK LINE	SOUTH WESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
UNITED STATES										
ALL COMMODITIES	11%	12%	11%	10%	9%	12%	10%	12%	8%	9%
I ROUGH MATERIAL*	11	15	9	8	11	9	34	11	0	5
Sand, Stone and Gravel	11	15	9	8	11	9	34	11	0	5
II RAW MATERIAL*	9	9	10	9	6	10	8	16	6	7
Bulk Grain and Beets	9	15	6	13	18	8	1	78	5	10
Perishables	9	9	8	8	9	10	8	12	6	6
Live Animals	7	8	11	5	9	5	7	6	5	6
Coal and Coke	9	9	10	9	4	9	10	14	11	7
Ores	9	9	11	15	3	7	6	15	1	4
Sulphur & Sulphuric Acid	11	3	5	11	7	12	13	14	4	18
Forest Products	11	11	15	10	13	11	10	14	3	5
III SEMI-PROCESSED MATERIAL*	13	13	12	12	15	15	13	14	8	13
Cotton, Hay and Tobacco	14	14	15	16	15	15	11	13	6	11
Paper and Products	13	11	11	11	15	15	14	21	9	15
IV NECESSARIES*	11	12	10	12	16	12	11	14	9	12
Cereals	13	14	10	16	15	12	11	16	8	17
Miscellaneous Farm Products	12	18	11	11	29	12	10	9	0	12
Edible Animal Products	10	10	9	8	11	12	6	12	18	10
Oils, Vegetable & Animal	16	9	16	16	15	14	20	19	12	11
Manufactured Food	11	24	10	12	11	10	9	14	10	12
Textiles and Leather	11	8	11	11	9	14	11	10	2	11
V AUXILIARIES*	14	17	14	15	13	14	16	11	10	12
Petroleum and Products	15	14	75	16	8	15	17	10	3	7
Building Materials	15	14	15	17	15	14	15	14	11	12
Chemicals	12	9	15	9	23	11	14	15	5	13
Miscellaneous	14	21	13	12	15	14	11	9	17	15
VI ACCESSORIES*	14	15	14	15	12	17	11	17	10	10
Iron and Steel	15	12	13	16	10	17	13	18	10	15
Other Metals	12	4	10	14	0	12	23	8	13	2
Appliances	12	19	13	12	12	16	7	15	10	8
Glass and Tile	17	19	20	14	16	21	13	15	10	10
NEW ENGLAND										
ALL COMMODITIES	10%	10%	9%	12%	11%	11%	8%	13%	12%	9%
I ROUGH MATERIAL*	10	6	-	7	15	-	-	-	-	-
Sand, Stone and Gravel	10	6	-	7	15	-	-	-	-	-
II RAW MATERIAL*	8	7	8	9	13	4	7	13	12	9
Bulk Grain and Beets	32	32	-	-	-	-	-	-	-	-
Perishables	7	2	7	11	6	4	7	13	12	9
Live Animals	5	7	1	-	-	-	0	-	-	-
Coal and Coke	15	15	0	-	-	-	-	-	-	-
Ores	6	14	3	-	-	-	-	-	-	-
Sulphur & Sulphuric Acid	5	5	-	-	-	-	-	-	-	-
Forest Products	9	8	9	7	31	0	-	-	-	-
III SEMI-PROCESSED MATERIAL*	11	6	7	16	-	18	0	-	-	-
Cotton, Hay and Tobacco	5	5	-	3	-	-	-	-	-	-
Paper and Products	11	6	7	16	-	18	0	-	-	-
IV NECESSARIES*	9	12	9	7	6	-	-	-	-	-
Cereals	13	15	1	-	-	-	-	-	-	-
Miscellaneous Farm Products	7	9	0	-	-	-	-	-	-	-
Edible Animal Products	14	10	27	-	-	-	-	-	-	-
Oils, Vegetable and Animal	3	0	3	-	-	-	-	-	-	-
Manufactured Food	10	12	15	8	6	-	-	-	-	-
Textiles and Leather	7	6	7	8	-	-	-	-	-	-
V AUXILIARIES*	14	14	16	16	-	-	0	-	-	-
Petroleum and Products	16	15	25	-	-	-	-	-	-	-
Building Materials	11	18	11	0	-	-	-	-	-	-
Chemicals	6	13	-	0	-	-	0	-	-	-
Miscellaneous	14	9	15	19	-	11	0	-	-	-
VI ACCESSORIES*	12	8	10	15	10	-	20	-	-	-
Iron and Steel	15	8	12	19	7	-	26	-	-	-
Other Metals	6	5	13	0	-	-	-	-	-	-
Appliances	9	29	3	4	10	-	-	-	-	-
Glass and Tile	5	1	0	-	-	-	8	-	-	-

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

Analysis 71.3 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in Trunk Line and Central Territories

	AVERAGE DEGREE OF CIRCUITY									
	DESTINATION TERRITORIES									
ORIGIN TERRITORY COMMODITY GROUP	UNITED STATES	NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK LINE	SOUTH WESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
TRUNK LINE										
ALL COMMODITIES	11%	12%	10%	12%	16%	13%	11%	16%	13%	17%
I ROUGH MATERIAL*	11	83	9	11	0	21	-	-	-	-
Sand, Stone and Gravel	11	83	9	11	0	21	-	-	-	-
II RAW MATERIAL*	10	8	9	11	13	12	7	12	5	-
Bulk Grain and Beets	3	14	2	0	25	1	-	-	-	-
Perishables	9	5	8	9	13	14	7	11	5	-
Live Animals	14	10	21	2	1	3	-	-	-	-
Coal and Coke	10	8	10	12	22	-	-	-	-	-
Ores	9	13	4	9	-	49	-	-	-	-
Sulphur & Sulphuric Acid	7	0	5	7	9	15	-	-	-	-
Forest Products	14	12	14	14	6	3	-	24	-	-
III SEMI-PROCESSED MATERIAL*	14	13	11	9	33	24	26	7	8	-
Cotton, Hay and Tobacco	15	15	10	0	42	29	40	-	-	-
Paper and Products	14	10	11	9	31	22	25	7	8	-
IV NECESSARIES*	11	19	8	11	22	12	8	-	-	11
Cereals	11	19	8	16	17	15	-	-	-	-
Miscellaneous Farm Products	8	23	5	8	11	5	8	-	-	14
Edible Animal Products	16	20	8	0	71	13	-	-	-	-
Oils, Vegetable & Animal	12	10	11	14	-	4	-	-	-	8
Manufactured Food	11	23	9	12	12	5	7	-	-	11
Textiles and Leather	13	5	5	6	6	26	-	-	-	-
V AUXILIARIES*	14	24	13	13	14	12	9	8	16	20
Petroleum and Products	14	16	15	15	5	12	4	11	0	-
Building Materials	12	8	14	9	15	16	13	-	-	-
Chemicals	12	5	12	8	29	5	15	10	-	19
Miscellaneous	15	38	7	14	16	19	11	6	21	21
VI ACCESSORIES*	14	14	12	12	15	13	8	23	-	18
Iron and Steel	14	13	11	12	12	16	9	25	-	18
Other Metals	7	-	7	6	-	-	-	-	-	-
Appliances	12	17	9	12	18	11	16	18	-	-
Glass and Tile	19	19	28	10	24	14	4	-	-	16
CENTRAL										
ALL COMMODITIES	12%	13%	12%	11%	12%	15%	11%	16%	11%	11%
I ROUGH MATERIAL*	9	10	15	7	6	2	10	-	-	-
Sand, Stone and Gravel	9	10	15	7	6	2	10	-	-	-
II RAW MATERIAL*	10	10	10	10	8	12	12	12	6	2
Bulk Grain and Beets	12	11	11	15	20	8	9	88	-	-
Perishables	13	14	15	12	12	17	7	-	-	-
Live Animals	8	7	9	6	10	22	4	11	8	2
Coal and Coke	10	-	22	10	2	0	12	14	2	-
Ores	12	6	12	20	1	-	3	0	-	-
Sulphur & Sulphuric Acid	20	-	4	30	13	24	16	-	-	-
Forest Products	12	20	7	14	5	12	13	-	-	-
III SEMI-PROCESSED MATERIAL*	15	16	14	16	14	14	11	28	-	33
Cotton, Hay and Tobacco	14	15	10	23	13	14	8	-	-	-
Paper and Products	15	18	15	14	16	14	11	28	-	33
IV NECESSARIES*	12	13	12	11	12	12	12	15	11	12
Cereals	12	10	12	15	13	12	13	-	0	14
Miscellaneous Farm Products	13	25	13	7	11	16	8	11	-	-
Edible Animal Products	11	10	12	11	12	10	0	17	-	15
Oils, Vegetable and Animal	14	-	22	6	0	17	13	-	-	-
Manufactured Food	13	36	11	10	11	11	14	15	14	10
Textiles and Leather	7	4	4	5	-	16	6	-	-	-
V AUXILIARIES*	15	18	15	14	17	21	11	17	14	18
Petroleum and Products	14	-	10	14	16	18	12	17	-	-
Building Materials	19	30	19	17	11	23	8	17	-	-
Chemicals	11	9	10	11	9	18	10	20	5	9
Miscellaneous	15	18	15	11	20	22	10	15	18	18
VI ACCESSORIES*	13	13	14	15	12	18	10	15	10	9
Iron and Steel	14	13	14	17	9	16	13	14	5	15
Other Metals	14	-	10	2	-	12	40	-	20	-
Appliances	11	9	13	13	15	19	6	17	10	8
Glass and Tile	16	18	16	15	17	34	22	14	-	4

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

SECTION 71. DIRECTNESS

Analysis 71.4 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in Pocahontas and Southern Territories

ORIGIN TERRITORY COMMODITY GROUP	AVERAGE DEGREE OF CIRCUITY									
	DESTINATION TERRITORIES									
	UNITED STATES	NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK LINE	SOUTH WESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
POCAHONTAS										
ALL COMMODITIES	9%	12%	12%	8%	5%	12%	13%	18%	5%	-
I ROUGH MATERIAL*	6	-	2	4	14	0	-	-	-	-
Sand, Stone and Gravel	6	-	2	4	14	0	-	-	-	-
II RAW MATERIAL*	8	8	11	8	4	10	13	5	5	-
Bulk Grain and Beets	6	-	-	-	-	0	9	-	-	-
Perishables	7	0	4	7	25	12	-	0	-	-
Live Animals	2	-	2	-	17	-	0	-	-	-
Coal and Coke	8	9	11	8	4	10	13	7	5	-
Ores	8	-	12	-	6	6	-	-	-	-
Sulphur and Sulphuric Acid	1	-	0	-	2	0	-	-	-	-
Forest Products	12	6	15	6	10	40	-	-	-	-
III SEMIPROCESSED MATERIAL*	13	-	14	2	9	16	10	84	-	-
Cotton, Hay and Tobacco	13	-	39	-	9	17	-	-	-	-
Paper and Products	13	-	7	2	10	15	10	84	-	-
IV NECESSARIES*	14	70	8	9	10	16	8	-	-	-
Cereals	21	-	-	4	20	28	-	-	-	-
Miscellaneous Farm Products	9	-	9	13	2	4	8	-	-	-
Edible Animal Products	53	27	9	-	-	0	-	-	-	-
Oils, Vegetable and Animal	21	-	9	-	4	34	-	-	-	-
Manufactured Food	11	22	0	3	0	15	-	-	-	-
Textiles and Leather	6	-	-	0	0	9	-	-	-	-
V AUXILIARIES*	15	7	19	11	11	16	16	18	-	-
Petroleum and Products	16	13	15	21	10	18	29	-	-	-
Building Materials	20	-	3	0	20	49	-	-	-	-
Chemicals	18	-	27	13	0	8	23	18	-	-
Miscellaneous	12	5	20	4	3	8	12	-	-	-
VI ACCESSORIES*	14	18	19	9	9	14	8	9	-	-
Iron and Steel	12	5	15	3	11	19	5	-	-	-
Other Metals	23	-	30	10	-	-	-	-	-	-
Appliances	9	-	18	6	0	-	9	-	-	-
Glass and Tile	16	22	22	18	9	7	8	9	-	-
SOUTHEASTERN										
ALL COMMODITIES	11%	10%	12%	10%	13%	11%	12%	17%	2%	13%
I ROUGH MATERIAL*	9	17	9	5	11	9	-	16	-	-
Sand, Stone and Gravel	9	17	9	5	11	9	-	16	-	-
II RAW MATERIAL*	10	5	10	9	8	10	12	20	2	-
Bulk Grain and Beets	8	-	27	-	0	7	-	-	-	-
Perishables	9	3	6	7	10	13	13	22	-	-
Live Animals	7	3	14	3	0	4	13	-	-	-
Coal and Coke	9	-	48	8	5	8	10	20	2	-
Ores	7	-	15	18	-	4	1	-	0	-
Sulphur and Sulphuric Acid	11	-	5	8	0	11	15	4	-	-
Forest Products	13	9	14	15	17	11	18	15	3	-
III SEMIPROCESSED MATERIAL*	15	15	16	10	18	15	25	22	-	-
Cotton, Hay and Tobacco	15	15	14	10	20	15	7	-	-	-
Paper and Products	16	13	20	10	4	15	36	22	-	-
IV NECESSARIES*	13	17	14	12	26	12	10	16	3	-
Cereals	11	-	13	43	6	10	-	17	-	-
Miscellaneous Farm Products	13	-	5	8	45	13	19	-	-	-
Edible Animal Products	11	18	15	-	3	8	-	24	-	-
Oils, Vegetable and Animal	17	-	21	14	24	14	8	40	-	-
Manufactured Food	13	-	26	13	3	12	8	13	-	24
Textiles and Leather	13	17	18	17	12	9	11	0	3	11
V AUXILIARIES*	14	15	16	13	11	15	11	13	-	9
Petroleum and Products	16	-	21	9	0	17	11	10	-	-
Building Materials	11	24	6	11	4	9	-	25	-	-
Chemicals	12	7	28	11	-	8	6	18	-	-
Miscellaneous	13	14	15	17	14	11	13	10	-	9
VI ACCESSORIES*	19	22	19	30	13	17	16	17	-	-
Iron and Steel	19	14	24	33	0	17	15	17	-	-
Other Metals	2	-	3	-	0	-	-	-	-	-
Appliances	18	34	19	6	23	15	19	18	-	-
Glass and Tile	17	-	1	-	-	29	-	0	-	-

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

SECTION 71. DIRECTNESS

ANALYSIS 71.5 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in Western Trunk Line and Southwestern Territories

ORIGIN TERRITORY COMMODITY GROUP	AVERAGE DEGREE OF CIRCUITY									
	DESTINATION TERRITORIES									
	UNITED STATES	NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK LINE	SOUTH WESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
WESTERN TRUNK LINE										
ALL COMMODITIES	10%	10%	10%	8%	11%	13%	9%	17%	9%	11%
I ROUGH MATERIAL*	32	-	12	5	-	-	38	34	-	-
Sand, Stone and Gravel	32	-	12	5	-	-	38	34	-	-
II RAW MATERIAL*	7	11	15	7	11	10	8	23	6	10
Bulk Grain and Beets	9	-	0	10	20	5	8	20	5	14
Perishables	19	18	10	19	7	15	12	25	-	-
Live Animals	7	9	13	4	10	5	7	0	8	9
Coal and Coke	8	-	24	16	-	-	8	14	9	5
Ores	11	-	8	15	-	6	2	0	-	-
Sulphur and Sulphuric Acid	5	-	-	0	6	-	13	-	1	10
Forest Products	12	-	23	9	6	9	9	22	-	6
III SEMI-PROCESSED MATERIAL*	10	0	14	6	8	9	9	33	10	11
Cotton, Hay and Tobacco	10	0	-	9	-	10	9	55	8	-
Paper and Products	10	0	14	6	8	8	14	21	11	11
IV NECESSARIES*	10	9	9	9	11	13	9	13	13	13
Cereals	13	8	11	15	17	13	10	12	8	16
Miscellaneous Farm Products	11	0	14	4	-	17	10	14	-	-
Edible Animal Products	9	10	9	5	7	13	7	13	25	11
Oils, Vegetable and Animal	12	-	-	1	-	31	5	-	1	-
Manufactured Food	11	6	7	14	14	11	7	15	0	20
Textiles and Leather	10	4	-	2	-	14	13	15	-	-
V AUXILIARIES*	13	8	16	12	12	6	13	13	9	9
Petroleum and Products	13	-	25	14	-	21	13	14	-	7
Building Materials	13	-	13	18	-	4	13	17	16	-
Chemicals	15	-	0	0	-	-	32	-	-	0
Miscellaneous	10	8	16	10	12	15	11	6	1	10
VI ACCESSORIES*	13	30	12	14	17	18	7	13	12	9
Iron and Steel	12	-	22	35	-	14	10	18	11	5
Other Metals	6	3	7	15	-	-	4	0	-	-
Appliances	14	37	12	7	17	-	7	11	17	13
Glass and Tile	18	-	-	0	-	22	-	0	-	-
SOUTHWESTERN										
ALL COMMODITIES	14%	14%	13%	14%	23%	12%	18%	13%	15%	5%
I ROUGH MATERIAL*	11	-	11	15	-	28	0	11	-	6
Sand, Stone and Gravel	11	-	11	15	-	28	0	11	-	6
II RAW MATERIAL*	12	20	13	8	7	11	13	14	9	4
Bulk Grain and Beets	16	-	15	2	-	18	56	17	-	11
Perishables	11	20	11	5	-	42	18	8	9	-
Live Animals	8	-	11	13	-	6	10	7	-	0
Coal and Coke	14	-	-	-	-	-	15	12	-	10
Ores	18	-	13	38	-	46	13	24	-	0
Sulphur and Sulphuric Acid	14	-	-	0	-	-	11	22	8	-
Forest Products	14	-	19	12	7	7	7	13	16	0
III SEMI-PROCESSED MATERIAL*	14	11	30	10	-	18	24	12	-	-
Cotton, Hay and Tobacco	14	11	30	2	-	20	30	12	-	-
Paper and Products	12	-	-	21	-	1	0	15	-	-
IV NECESSARIES*	14	3	13	10	27	7	14	17	21	13
Cereals	17	-	-	1	-	11	45	18	-	-
Miscellaneous Farm Products	15	0	19	8	29	0	11	8	-	-
Edible Animal Products	11	5	14	11	5	11	3	9	-	0
Oils, Vegetable and Animal	16	-	-	9	-	3	16	17	21	18
Manufactured Food	11	-	8	11	-	4	11	20	-	-
Textiles and Leather	13	-	-	-	-	10	9	18	-	-
V AUXILIARIES*	16	8	16	18	5	12	22	10	30	8
Petroleum and Products	16	8	16	18	5	12	22	10	-	9
Building Materials	17	-	-	85	-	17	19	12	-	19
Chemicals	10	-	-	4	-	18	15	29	30	3
Miscellaneous	12	-	-	14	-	13	19	6	-	-
VI ACCESSORIES*	19	-	-	20	-	15	13	23	-	0
Iron and Steel	23	-	-	23	-	21	14	28	-	-
Other Metals	12	-	-	12	-	-	31	13	-	-
Appliances	15	-	-	30	17	-	14	8	-	0
Glass and Tile	17	-	-	5	12	28	0	39	-	-

* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls.

SECTION 71. DIRECTNESS

Analysis 71.6 Directness of Rail Service - Commodity Summary of Carloads (Terminated December 13, 1933) Originated in Pacific Northwest and Pacific Southwest Territories

ORIGIN TERRITORY COMMODITY GROUP	AVERAGE DEGREE OF CIRCUITY — DESTINATION TERRITORIES: UNITED STATES	NEW ENGLAND	TRUNK LINE	CENTRAL	POCAHONTAS	SOUTHEASTERN	WESTERN TRUNK LINE	SOUTHWESTERN	PACIFIC NORTHWEST	PACIFIC SOUTHWEST
PACIFIC NORTHWEST										
ALL COMMODITIES	8%	27%	11%	10%	0%	11%	6%	10%	4%	4%
I ROUGH MATERIAL*	0	-	-	-	-	-	0	-	0	0
Sand, Stone and Gravel	0	-	-	-	-	-	0	-	0	0
II RAW MATERIAL*	7	27	12	8	0	12	7	10	4	4
Bulk Grain and Beets	5	-	-	26	-	-	1	-	5	0
Perishables	7	-	7	7	0	11	5	11	1	4
Live Animals	4	-	12	8	-	-	1	0	2	4
Coal and Coke	5	-	-	-	-	-	5	-	5	4
Ores	5	-	-	13	-	-	2	-	2	-
Sulphur and Sulphuric Acid	6	-	6	-	-	-	-	-	-	-
Forest Products	10	27	21	7	-	14	10	8	2	4
III SEMIPROCESSED MATERIAL*	8	-	-	10	-	-	5	12	4	0
Cotton, Hay and Tobacco	4	-	-	-	-	-	2	-	5	0
Paper and Products	9	-	-	10	-	-	5	12	0	-
IV NECESSARIES*	11	-	8	30	-	1	7	9	8	6
Cereals	10	-	-	17	-	1	10	-	9	-
Miscellaneous Farm Products	15	-	11	39	-	-	6	14	1	15
Edible Animal Products	12	-	7	40	-	-	-	-	6	5
Oils, Vegetable & Animal	11	-	13	9	-	-	-	-	4	-
Manufactured Food	6	-	1	-	-	-	7	4	9	1
Textiles and Leathers	0	-	-	-	-	-	-	-	0	-
V AUXILIARIES*	6	-	-	11	-	-	6	11	4	0
Petroleum and Products	5	-	-	6	-	-	6	-	4	0
Building Materials	7	-	-	-	-	-	-	11	3	0
Chemicals	14	-	-	-	-	-	-	-	14	-
Miscellaneous	8	-	-	12	-	-	0	-	7	0
VI ACCESSORIES*	9	-	-	19	-	-	9	-	8	0
Iron and Steel	9	-	-	-	-	-	0	-	14	-
Other Metals	22	-	-	30	-	-	-	-	2	-
Appliances	4	-	-	0	-	-	12	-	0	0
Glass and Tile	9	-	-	-	-	-	0	-	10	-
PACIFIC SOUTHWEST										
ALL COMMODITIES	9%	11%	9%	11%	9%	7%	9%	8%	11%	8%
I ROUGH MATERIAL*	4	-	-	-	-	-	-	-	-	4
Sand, Stone and Gravel	4	-	-	-	-	-	-	-	-	4
II RAW MATERIAL*	9	11	9	9	9	7	8	9	12	7
Bulk Grain and Beets	11	-	9	13	-	-	0	-	-	10
Perishables	9	11	9	9	9	6	8	9	8	11
Live Animals	7	-	6	11	-	-	10	-	16	7
Coal and Coke	9	-	-	-	-	-	8	12	14	6
Ores	6	-	-	-	-	-	79	0	-	4
Sulphur and Sulphuric Acid	12	-	-	-	-	-	-	0	-	26
Forest Products	7	6	4	8	-	16	7	-	0	5
III SEMIPROCESSED MATERIAL*	15	-	-	30	-	-	0	-	0	11
Cotton, Hay and Tobacco	16	-	-	30	-	-	0	-	0	11
Paper and Products	9	-	-	-	-	-	-	-	-	9
IV NECESSARIES*	14	-	13	16	-	12	17	10	6	10
Cereals	21	-	-	30	-	14	-	-	0	25
Miscellaneous Farm Products	13	-	19	13	-	4	14	4	0	10
Edible Animal Products	9	-	8	-	-	-	-	-	-	19
Oils, Vegetable and Animal	23	-	-	25	-	-	29	-	-	7
Manufactured Food	11	-	2	17	-	14	10	12	7	6
Textiles and Leather	7	-	-	-	-	-	-	7	-	-
V AUXILIARIES*	9	-	-	13	-	-	1	10	7	9
Petroleum and Products	8	-	-	18	-	-	0	1	0	7
Building Materials	13	-	-	-	-	-	21	23	-	12
Chemicals	6	-	-	8	-	-	-	-	6	0
Miscellaneous	9	-	-	10	-	-	0	-	-	8
VI ACCESSORIES*	11	-	-	14	-	-	-	3	14	12
Iron and Steel	15	-	-	18	-	-	-	7	18	14
Other Metals	1	-	-	-	-	-	-	1	-	2
Appliances	4	-	-	9	-	-	-	0	3	4
Glass and Tile	11	-	-	-	-	-	-	-	-	11

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* Where commodities of two groups have been combined, the total is placed under the group in which the predominant commodity falls. For reconciliation by primary commodities see Analysis 3.0.

SECTION 73. CAPITAL SERVICING

Analysis 73.1 Unit Cost of Providing a Return on Carrier Investment

	COST OF ANNUAL CAPITAL SERVICE*: AGGREGATE (000)	RATIO TO COST#	PER ROUTE MILE	PER SCHEDULE	PER VEHICLE	PER NET TON	PER SCHEDULE MILE	PER VEHICLE MILE	PER TON MILE: GROSS	NET	EQUATED
RAIL - UNITED STATES	$916,062	46.60%	$3,773	$172	$34	$1.42	$2.34	$.0887	$.0012	$.0039	$.0020
WATER- UNITED STATES	17,868	13.59	68	158	-	.38	.71	-	-	.0005	-
PIPE - UNITED STATES	38,197	38.00%	412	-	-	.46	-	-	-	.0012	-
RAILWAYS:											
New England	$26,412	33.23	$3,460	$106	$20	$1.89	$2.13	$.0726	$.0012	$.0044	$.0023
Central East	354,188	39.50	5,910	152	33	1.30	2.44	.0816	.0011	.0033	.0017
Pocahontas	48,968	52.41	6,325	166	29	.65	2.88	.0877	.0010	.0023	.0012
Southeast	114,168	53.32	3,276	180	27	1.34	2.13	.0992	.0014	.0044	.0023
Northwest	173,946	41.73	2,201	155	40	1.34	1.80	.0744	.0011	.0038	.0020
Southwest	198,680	74.89	3,704	280	41	1.82	3.01	.1241	.0018	.0067	.0035
WATERWAYS:											
COMMON CARRIER (CARLOT)	$ 12,257	11.19	$ 72	$113	-	$ .65	$ .59	-	-	$.0007	-
Atlantic Coast	2,457	10.51	110	172	-	.53	.43	-	-	.0014	-
Atlantic Gulf	1,562	10.29	60	1,368	-	.68	.55	-	-	.0006	-
Intercoastal	4,992	11.81	57	11,502	-	1.27	.84	-	-	.0005	-
Inland Waters	1,510	18.55	159	2,234	-	.66	1.78	-	-	.0010	-
Great Lakes	1,087	13.05	122	86	-	.36	.58	-	-	.0010	-
Pacific Coast	649	5.29	46	8	-	.25	.18	-	-	.0006	-
OTHER CARRIERS (CARGO)	$ 5,611	25.59	$ 60	$1,420	-	$ .20	$1.26	-	-	$.0003	-
Atlantic Coast	581	13.52	31	1,122	-	.17	1.06	-	-	.0003	-
Atlantic Gulf	314	31.59	34	8,263	-	.60	1.95	-	-	.0003	-
Intercoastal	70	22.08	11	4,375	-	1.45	.36	-	-	.0005	-
Inland Waters	74	15.68	18	322	-	.13	.30	-	-	.0002	-
Great Lakes	4,487	29.75	91	2,058	-	.19	1.56	-	-	.0003	-
Pacific Coast	85	11.10	15	88	-	.53	.19	-	-	.0013	-
PIPE LINES:											
North Atlantic Coast	$ 2,742	41.19%	$ 186	-	-	$ .97	-	-	-	$.0026	-
Great Lakes - Southwest	15,960	33.39%	355	-	-	.64	-	-	-	.0008	-
Southwest Gulf	19,495	42.33%	591	-	-	.36	-	-	-	.0021	-

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* Five per cent upon the book investment of the carrier.

Operating expenses plus taxes.

Analysis 75.1 Carrier Function Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE GROSS	PER TON MILE NET RAIL	PER TON MILE NET WATER	PER TON MILE EQUATED
RAIL													
Total Costs	$1,965,979	77%	$8,096	$ 369	$72.42	$3.04	$80.55	$ 5.03	$.1903	$.0026	$.0083	-	$.0043
Maintenance	785,184	31	3,234	147	28.92	1.22	32.17	2.01	.0760	.0011	.0033	-	.0017
Transportation	809,406	32	3,333	152	29.82	1.25	33.16	2.07	.0784	.0011	.0034	-	.0018
Overhead	371,390	14	1,529	70	13.68	.57	15.22	.95	.0359	.0005	.0016	-	.0008
WATER													
CARLOT													
Total Costs	$ 109,540	107%	$ 640	$1,006	-	$5.84	$38.97	$ 5.30	-	-	$.0060	$.0034	-
Maintenance	18,524	18	108	170	-	.99	6.59	.90	-	-	.0010	.0006	-
Transportation	63,852	62	373	587	-	3.40	22.71	3.09	-	-	.0035	.0019	-
Overhead	27,164	27	159	250	-	1.45	9.66	1.31	-	-	.0015	.0008	-
CARGO													
Total Costs	$ 21,929	127%	$ 236	$5,549	-	$ .77	$30.50	$ 4.91	-	-	$.0012	$.0011	-
Maintenance	3,652	21	39	925	-	.13	5.08	.82	-	-	.0002	.0002	-
Transportation	15,157	88	163	3,835	-	.53	21.08	3.39	-	-	.0008	.0008	-
Overhead	3,120	18	34	789	-	.11	4.34	.70	-	-	.0002	.0002	-
PIPE													
Total Costs	$ 101,965	48%	$1,099	-	-	$1.23	-	-	-	-	$.0032#	-	-
Maintenance	48,355	23	521	-	-	.58	-	-	-	-	.0015	-	-
Transportation	27,901	13	301	-	-	.34	-	-	-	-	.0009	-	-
Overhead	25,709	12	277	-	-	.31	-	-	-	-	.0008	-	-

# Actual distance.

Analysis 75.2 Water Function Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	NET TON MILE RAIL	NET TON MILE WATER
CARLOT									
TOTAL COSTS									
United States	$ 109,540	107%	$ 640	$ 1,006	$ 5.84	$ 38.97	$ 5.30	$ .0060	$ .0034
Atlantic Coast	23,378	94	1,044	1,639	5.00	32.69	4.11	.0132	.0118
Atlantic Gulf	15,174	114	581	13,287	6.64	53.59	5.35	.0056	.0045
Intercoastal	42,257	109	480	97,365	10.79	52.59	7.15	.0042	.0018
Inland Waters	8,142	95	858	12,044	3.55	36.68	9.62	.0055	.0034
Great Lakes	8,331	113	761	660	2.78	35.38	4.42	.0073	.0065
Pacific Coast	12,258	130	869	154	4.73	22.21	3.48	.0119	.0127
MAINTENANCE									
United States	$ 18,524	18%	$ 108	$ 170	$ .99	$ 6.59	$ .90	$ .0010	$ .0006
Atlantic Coast	4,467	18	200	313	.95	6.25	.79	.0025	.0022
Atlantic Gulf	4,141	31	158	3,626	1.81	14.62	1.46	.0015	.0012
Intercoastal	4,962	13	56	11,433	1.27	6.18	.84	.0005	.0002
Inland Waters	2,068	24	218	3,058	.90	9.32	2.44	.0014	.0009
Great Lakes	1,376	19	126	109	.46	5.84	.73	.0012	.0011
Pacific Coast	1,510	16	107	18	.58	2.74	.43	.0015	.0016
TRANSPORTATION									
United States	$ 63,852	62%	$ 373	$ 587	$ 3.40	$ 22.71	$ 3.09	$ .0035	$ .0019
Atlantic Coast	14,471	58	646	1,014	3.09	20.24	2.54	.0082	.0073
Atlantic Gulf	8,714	66	333	7,630	3.81	30.77	3.07	.0032	.0026
Intercoastal	24,892	64	282	57,353	6.35	30.98	4.21	.0025	.0011
Inland Waters	4,697	55	495	6,948	2.05	21.16	5.55	.0032	.0020
Great Lakes	4,364	59	398	345	1.45	18.53	2.32	.0038	.0034
Pacific Coast	6,714	71	476	84	2.59	12.17	1.91	.0065	.0070
OVERHEAD									
United States	$ 27,164	27%	$ 159	$ 250	$ 1.45	$ 9.66	$ 1.31	$ .0015	$ .0008
Atlantic Coast	4,439	18	198	311	.95	6.21	.78	.0025	.0022
Atlantic Gulf	2,319	17	89	2,030	1.01	8.19	.82	.0009	.0007
Intercoastal	12,403	32	141	28,578	3.17	15.44	2.10	.0012	.0005
Inland Waters	1,377	16	145	2,037	.60	6.20	1.63	.0009	.0006
Great Lakes	2,591	35	237	205	.86	11.00	1.37	.0023	.0020
Pacific Coast	4,034	43	286	50	1.56	7.31	1.15	.0039	.0042
CARGO									
TOTAL COSTS									
United States	$ 21,929	127%	$ 236	$ 5,549	$ .77	$ 30.50	$ 4.91	$ .0012	$ .0011
Atlantic Coast	4,296	131	232	829	1.27	47.42	7.84	.0020	.0020
Atlantic Gulf	994	81	109	26,168	1.92	31.47	6.17	.0012	.0010
Intercoastal	318	174	52	19,860	6.58	9.20	1.65	.0023	.0011
Inland Waters	472	47	115	2,053	.81	6.95	1.92	.0014	.0007
Great Lakes	15,081	136	305	6,918	.63	41.85	5.24	.0010	.0009
Pacific Coast	767	203	137	791	4.74	5.72	1.73	.0116	.0116
MAINTENANCE									
United States	$ 3,652	21%	$ 39	$ 925	$ .13	$ 5.08	$ .82	$ .0002	$ .0002
Atlantic Coast	942	29	51	1,818	.28	10.40	1.72	.0004	.0004
Atlantic Gulf	224	18	24	5,882	.43	7.09	1.39	.0003	.0002
Intercoastal	87	48	14	5,462	1.81	2.52	.45	.0006	.0003
Inland Waters	70	7	17	304	.12	1.03	.28	.0002	.0001
Great Lakes	2,270	20	46	1,041	.10	6.30	.80	.0001	.0001
Pacific Coast	59	16	11	60	.36	.44	.13	.0009	.0009
TRANSPORTATION									
United States	$ 15,157	88%	$ 163	$ 3,835	$ .53	$ 21.08	$ 3.39	$ .0008	$ .0008
Atlantic Coast	2,860	87	154	5,521	.85	31.57	5.22	.0013	.0013
Atlantic Gulf	768	63	84	20,211	1.48	24.32	4.76	.0009	.0008
Intercoastal	197	108	32	12,316	4.08	5.70	1.02	.0014	.0007
Inland Waters	317	31	77	1,377	.54	4.67	1.29	.0009	.0005
Great Lakes	10,403	94	210	4,772	.44	28.87	3.62	.0007	.0007
Pacific Coast	612	162	110	631	3.79	4.56	1.38	.0092	.0092
OVERHEAD									
United States	$ 3,120	18%	$ 34	$ 789	$ .11	$ 4.34	$ .70	$ .0002	$ .0002
Atlantic Coast	495	15	27	954	.15	5.46	.90	.0002	.0002
Atlantic Gulf	3	00	0	74	.01	.09	.02	.0000	.0000
Intercoastal	33	18	5	2,081	.69	.95	.17	.0003	.0001
Inland Waters	86	8	21	371	.15	1.27	.35	.0003	.0001
Great Lakes	2,408	22	49	1,104	.10	6.68	.84	.0002	.0001
Pacific Coast	96	25	17	99	.59	.72	.22	.0015	.0015

Analysis 75.3 Pipe Function Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	NET TON	NET TON MILE
TOTAL COSTS					
United States	$ 101,965	48%	$ 1,099	$ 1.23	$ .0032
North Atlantic Coast	6,757	73	459	2.39	.0064
Great Lakes Southwest	48,485	48	1,083	1.93	.0023
Southwest Gulf	46,723	46	1,404	.85	.0049
MAINTENANCE					
United States	$ 48,355	23%	$ 522	$ .58	$ .0015
North Atlantic Coast	2,647	28	180	.94	.0025
Great Lakes Southwest	22,170	22	495	.88	.0011
Southwest Gulf	23,538	23	707	.43	.0025
TRANSPORTATION					
United States	$ 27,901	13%	$ 301	$ .33	$ .0009
North Atlantic Coast	2,552	27	173	.90	.0024
Great Lakes Southwest	12,698	23	284	.51	.0006
Southwest Gulf	12,651	12	380	.23	.0013
OVERHEAD					
United States	$ 25,709	12%	$ 277	$ .31	$ .0008
North Atlantic Coast	1,558	17	106	.55	.0015
Great Lakes Southwest	13,617	14	304	.54	.0006
Southwest Gulf	10,534	10	317	.19	.0011

Analysis 75.4 Rail Function Unit Costs - 1932

	AGGRE-GATE (MIL-LIONS)	PER-CENT OF TOTAL COST	PER ROUTE MILE	PER SCHED-ULE	PER SCHED-ULE HOUR	PER SCHED-ULE MILE	PER * VE-HICLE	PER VE-HICLE MILE	PER * NET TON	PER TON MILE		
										NET	EQUAT-ED	GROSS
TOTAL COSTS	$		$	$	$	$	$	$	$	$	$	$
United States	1,966	-	8,096	368.64	80.55	5.03	72.42	.1903	3.04	.00834	.00431	.00263
Eastern	976	-	14,450	379.58	95.09	6.20	67.04	.2084	2.69	.00861	.00445	.00285
Southern	307	-	7,220	330.97	69.90	4.35	66.48	.1799	2.32	.00650	.00336	.00233
Western	682	-	5,142	372.40	70.04	4.19	78.74	.1732	4.01	.00911	.00471	.00251
New England	79	-	10,413	320.36	93.27	6.42	49.28	.2297	3.07	.01317	.00681	.00372
Trunk Line	431	-	19,998	341.62	101.88	7.31	70.68	.2294	2.62	.00894	.00462	.00308
Central	465	-	12,133	438.60	89.84	5.40	67.98	.1893	2.69	.00787	.00407	.00256
Pocahontas	93	-	12,063	316.49	71.73	5.49	55.62	.1673	1.35	.00439	.00227	.00187
Southeastern	214	-	6,144	337.70	69.12	3.99	72.66	.1861	3.40	.00823	.00425	.00262
Western Trunk Line	333	-	5,634	361.79	71.97	4.31	69.73	.1845	3.60	.00951	.00492	.00266
Southwestern	153	-	4,301	328.81	64.53	3.72	73.00	.1700	3.56	.00864	.00447	.00239
Pacific Northwest	83	-	4,202	415.33	69.19	4.30	114.70	.1573	5.00	.00806	.00417	.00223
Pacific Southwest	111	-	6,225	461.05	73.44	4.54	106.40	.1604	6.34	.00953	.00493	.00249
MAINTENANCE	$	%	$	$	$	$	$	$	$	$	$	$
United States	785	40	3,234	147.23	32.17	2.01	28.92	.0760	1.22	.00333	.00172	.00105
Eastern	377	39	5,589	146.82	36.78	2.40	25.93	.0806	1.04	.00333	.00172	.00110
Southern	125	41	2,953	135.34	28.58	1.78	27.18	.0736	.95	.00266	.00137	.00095
Western	281	41	2,124	153.84	28.93	1.73	32.53	.0716	1.66	.00376	.00195	.00104
New England	30	38	3,949	121.50	35.37	2.44	18.69	.0871	1.16	.00500	.00258	.00141
Trunk Line	159	37	7,392	126.27	37.66	2.70	26.13	.0848	.97	.00330	.00171	.00114
Central	188	40	4,901	177.19	36.29	2.18	27.46	.0765	1.09	.00318	.00164	.00103
Pocahontas	39	42	5,040	132.23	29.97	2.29	23.24	.0699	.56	.00183	.00095	.00078
Southeastern	86	41	2,489	136.79	28.00	1.61	29.43	.0754	1.38	.00333	.00172	.00106
Western Trunk Line	137	41	2,316	148.70	29.58	1.77	28.66	.0758	1.48	.00391	.00202	.00109
Southwestern	65	43	1,829	139.80	27.44	1.58	31.04	.0723	1.51	.00368	.00190	.00102
Pacific Northwest	34	42	1,757	173.64	28.93	1.80	47.95	.0657	2.09	.00337	.00174	.00093
Pacific Southwest	44	40	2,484	183.99	29.31	1.81	42.46	.0640	2.53	.00380	.00197	.00099
TRANSPORTATION	$	%	$	$	$	$	$	$	$	$	$	$
United States	809	41	3,333	151.77	33.16	2.07	29.82	.0783	1.25	.00343	.00178	.00108
Eastern	415	43	6,145	161.41	40.43	2.63	28.51	.0886	1.14	.00366	.00189	.00121
Southern	121	40	2,860	131.09	27.68	1.72	26.33	.0713	.92	.00257	.00133	.00092
Western	272	40	2,054	148.74	27.97	1.67	31.45	.0692	1.60	.00364	.00188	.00100
New England	34	43	4,520	139.05	40.48	2.79	21.39	.0997	1.33	.00296	.00296	.00162
Trunk Line	190	44	8,818	150.63	44.92	3.22	31.17	.1011	1.16	.00394	.00204	.00136
Central	190	41	4,964	179.46	36.76	2.21	27.82	.0774	1.10	.00322	.00166	.00105
Pocahontas	35	38	4,632	121.52	27.54	2.11	21.36	.0642	.52	.00168	.00087	.00072
Southeastern	85	40	2,466	135.54	27.74	1.60	29.16	.0747	1.36	.00330	.00171	.00105
Western Trunk Line	133	40	2,258	145.02	28.85	1.73	27.95	.0739	1.44	.00381	.00197	.00107
Southwestern	59	39	1,676	128.16	25.15	1.45	28.45	.0662	1.39	.00337	.00174	.00093
Pacific Northwest	32	39	1,650	163.09	27.17	1.69	45.04	.0618	1.96	.00317	.00164	.00088
Pacific Southwest	46	41	2,573	190.57	30.35	1.88	43.98	.0663	2.62	.00394	.00204	.00105
OVERHEAD #	$	%	$	$	$	$	$	$	$	$	$	$
United States	371	19	1,529	69.64	15.22	.95	13.68	.0359	.57	.00158	.00081	.00050
Eastern	183	19	2,716	71.35	17.87	1.16	12.60	.0392	.51	.00162	.00084	.00053
Southern	59	20	1,408	64.54	13.63	.85	12.96	.0351	.45	.00127	.00066	.00046
Western	127	19	964	69.82	13.13	.79	14.76	.0325	.75	.00171	.00088	.00047
New England	14	19	1,944	59.81	17.41	1.20	9.20	.0429	.58	.00246	.00127	.00069
Trunk Line	81	19	3,788	64.72	19.30	1.38	13.39	.0435	.50	.00169	.00088	.00052
Central	86	19	2,267	81.95	16.79	1.01	12.70	.0354	.50	.00147	.00076	.00048
Pocahontas	18	20	2,392	62.74	14.22	1.09	11.03	.0332	.27	.00087	.00045	.00037
Southeastern	41	19	1,189	65.37	13.38	.77	14.07	.0360	.66	.00159	.00082	.00051
Western Trunk Line	62	19	1,060	68.07	13.54	.81	13.12	.0347	.68	.00179	.00092	.00050
Southwestern	28	19	796	60.85	11.94	.69	13.51	.0315	.66	.00160	.00083	.00044
Pacific Northwest	15	19	795	78.60	13.09	.81	21.71	.0298	.95	.00153	.00079	.00042
Pacific Southwest	20	19	1,168	86.49	13.78	.85	19.96	.0301	1.19	.00179	.00092	.00047

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* For the United States, Cars and Net Tons originated for all other Districts, Cars and Net Tons equated to represent one handling per Rate Territory.

# Does not include Loss and Damage Freight.

SECTION 75. FUNCTION COSTS

Analysis 75.5 Rail Function Cost Percentages - 1932

PURPOSE DISTRICTS AND TERRITORIES	ALL EXPENSE AND TAXES	OVERHEAD			DIRECT EXPENSES														
						MAINTENANCE WAY AND STRUCTURES					MAINTENANCE EQUIPMENT				TRANSPORTATION				
		TOTAL OVERHEAD	ADMINISTRATION	TAXES	TOTAL DIRECT	TOTAL	ROADWAY	POWER STRUCTURE	STATION	WHARVES DOCKS	TOTAL	LOCOMOTIVE	FREIGHT CAR HOME	FREIGHT CAR FOREIGN	TOTAL	MOVEMENT	SUPPLIES	STATION	FLOATAGE
Total Road and Yard																			
United States	100	18.9	9.1	9.8	81.1	12.9	11.6	.6	.5	.2	27.0	9.8	12.8	4.4	41.2	31.1	1.6	7.9	.6
Eastern	100	18.8	9.0	9.8	81.2	11.3	10.0	.6	.5	.2	27.4	9.9	12.6	4.9	42.5	31.6	1.8	8.1	1.1
Southern	100	19.5	9.4	10.2	80.5	15.2	13.8	.7	.5	.3	25.7	10.4	14.0	1.3	39.6	30.5	1.4	7.6	.2
Western	100	18.8	9.0	9.8	81.3	14.3	12.9	.7	.5	.2	27.0	9.3	12.7	5.1	39.9	30.6	1.5	7.8	.1
New England	100	18.7	9.0	9.7	81.3	14.6	13.2	.6	.6	.2	23.3	8.8	9.0	5.5	43.4	31.7	1.2	10.5	#
Trunk Line	100	18.9	9.1	9.9	81.1	10.0	8.6	.5	.5	.3	27.0	10.8	12.1	4.2	44.1	32.0	1.7	8.2	2.2
Central	100	18.7	9.0	9.7	81.3	11.9	10.8	.6	.4	.1	28.5	9.4	13.7	5.5	40.9	31.1	1.9	7.6	.3
Pocahontas	100	19.8	9.5	10.3	80.2	15.2	13.3	1.0	.4	.5	26.6	11.7	15.2	Cr .3	38.4	30.2	1.7	6.0	.5
Southeastern	100	19.4	9.3	10.1	80.6	15.2	13.9	.5	.6	.1	25.3	9.9	13.4	2.0	40.1	30.5	1.2	8.3	.1
Western Trunk Line	100	18.8	9.0	9.8	81.2	13.8	12.2	.7	.5	.4	27.3	8.8	13.8	4.8	40.1	30.4	1.7	8.0	#
Southwestern	100	18.5	8.9	9.6	81.5	15.4	14.3	.6	.5	#	27.1	9.3	11.5	6.4	39.0	29.3	1.0	8.6	.1
Pacific Northwest	100	18.9	9.1	9.9	81.1	16.1	15.0	.7	.3	#	25.7	10.3	11.1	4.2	39.3	31.2	1.7	6.3	.1
Pacific Southwest	100	18.8	9.0	9.8	81.2	12.8	11.6	.6	.7	.1	27.1	10.0	12.1	5.1	41.3	32.4	1.5	7.0	.3
Road																			
United States	100	19.6	9.4	10.2	80.4	21.9	20.9	.9	.2	-	18.6	15.4	2.2	1.0	39.9	37.8	.3	1.8	-
Eastern	100	19.6	9.4	10.2	80.4	20.5	19.5	.9	.2	-	19.2	15.9	2.3	1.0	40.8	38.6	.3	1.9	-
Southern	100	19.7	9.4	10.2	80.3	24.5	23.5	.9	.1	-	18.7	16.1	2.1	.5	37.2	35.4	.3	1.5	-
Western	100	19.5	9.4	10.2	80.5	22.5	21.4	.9	.2	-	17.8	14.4	2.2	1.2	40.2	38.1	.3	1.8	-
New England	100	19.6	9.4	10.2	80.4	23.7	22.7	.8	.2	-	15.7	13.6	1.3	.8	40.9	38.4	.2	2.4	-
Trunk Line	100	19.6	9.4	10.2	80.4	18.3	17.3	.8	.2	-	19.9	17.2	2.0	.7	42.1	39.9	.3	2.0	-
Central	100	19.5	9.4	10.2	80.5	21.9	20.8	.9	.1	-	19.2	15.2	2.7	1.2	39.5	37.4	.4	1.7	-
Pocahontas	100	19.7	9.5	10.3	80.3	24.1	22.8	1.3	.1	-	20.4	17.7	2.5	.2	35.7	34.5	.3	1.0	-
Southeastern	100	19.6	9.4	10.2	80.4	24.6	23.8	.7	.2	-	17.9	15.4	1.9	.6	37.8	35.8	.3	1.7	-
Western Trunk Line	100	19.5	9.4	10.2	80.5	22.6	21.4	1.0	.2	-	17.4	14.1	2.1	1.2	40.4	38.4	.2	1.8	-
Southwestern	100	19.5	9.4	10.2	80.5	24.3	23.3	.8	.2	-	17.5	14.0	2.2	1.3	38.7	36.1	.2	2.4	-
Pacific Northwest	100	19.5	9.4	10.2	80.5	22.8	21.7	1.0	.1	-	18.1	15.2	1.7	1.2	39.6	38.0	.3	1.3	-
Pacific Southwest	100	19.5	9.4	10.2	80.5	19.5	18.6	.8	.2	-	18.8	15.1	2.6	1.1	42.1	40.2	.5	1.3	-
Yard																			
United States	100	18.3	8.8	9.5	81.7	5.3	3.8	.4	.8	.4	34.1	5.1	21.8	7.3	42.2	25.3	2.7	13.0	1.1
Eastern	100	18.3	8.8	9.5	81.7	4.9	3.5	.4	.7	.4	33.1	5.8	19.7	7.6	43.7	26.8	2.8	12.4	1.9
Southern	100	19.3	9.3	10.1	80.7	5.8	4.0	.5	.9	.5	32.8	4.7	25.9	2.2	42.1	25.5	2.5	13.7	.4
Western	100	18.0	8.6	9.3	82.1	5.8	4.1	.4	.9	.4	36.6	4.0	23.5	9.2	39.7	22.8	2.8	13.9	.2
New England	100	17.9	8.6	9.3	82.1	6.7	5.0	.4	1.0	.3	29.9	4.7	15.6	9.6	45.5	25.8	2.1	17.6	#
Trunk Line	100	18.5	8.9	9.6	81.5	4.4	2.8	.3	.7	.6	31.7	6.5	18.8	6.4	45.4	26.8	2.7	12.3	3.7
Central	100	18.1	8.7	9.4	81.9	5.2	3.9	.5	.6	.2	34.8	5.4	21.1	8.3	41.9	26.9	3.0	11.6	.5
Pocahontas	100	19.9	9.6	10.4	80.1	5.8	3.5	.6	.6	1.1	33.1	5.5	28.6	Cr .9	41.2	25.8	3.2	11.2	1.1
Southeastern	100	19.1	9.2	9.9	80.9	5.8	4.2	.4	1.0	.3	32.7	4.4	24.8	3.5	42.4	25.4	2.2	14.8	.1
Western Trunk Line	100	18.2	8.7	9.5	81.8	6.2	4.2	.4	.8	.7	35.8	4.2	23.8	7.9	39.8	23.6	2.9	13.3	#
Southwestern	100	17.4	8.3	9.0	82.6	5.3	4.1	.3	.8	.1	38.1	3.9	22.0	12.2	39.3	21.6	1.9	15.6	.1
Pacific Northwest	100	18.1	8.7	9.4	81.9	6.6	5.5	.4	.6	.1	36.5	3.4	24.5	8.6	38.8	21.6	3.6	13.4	.2
Pacific Southwest	100	17.8	8.5	9.3	82.2	4.5	2.9	.2	1.2	.1	37.3	3.5	23.8	10.0	40.4	22.7	2.8	14.1	.7

Less than .05 percent.

SECTION 77. MAINTENANCE COSTS

Analysis 77.1 Carrier Maintenance Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE GROSS	PER TON MILE NET RAIL	PER TON MILE NET WATER	PER TON MILE EQUATED
RAIL													
Maintenance-Total	$785,184	31%	$3,234	$ 147	$28.92	$1.22	$32.17	$ 2.01	$.0760	$.0011	$.0033	-	$.0017
Roadway	228,146	9	940	43	8.41	.35	9.35	.58	.0221	.0003	.0010	-	.0005
Station	9,334	#	38	2	.34	.01	.38	.02	.0009	.0000	.0000	-	.0000
Wharves	4,422	#	18	1	.16	.01	.18	.01	.0004	.0000	.0000	-	.0000
Power	204,532	8	842	38	7.54	.32	8.38	.52	.0198	.0003	.0009	-	.0005
Vehicles	338,750	13	1,395	64	12.48	.52	13.88	.87	.0328	.0005	.0014	-	.0007
WATER													
CARLOT													
Maintenance-Total	$ 18,524	18%	$ 108	$ 170	-	$ .99	$ 6.59	$ .90	-	-	$.0010	$.0006	-
Roadway*	1,878	2	11	17	-	.10	.67	.09	-	-	.0001	.0001	-
Station	-	-	-	-	-	-	-	-	-	-	-	-	-
Wharves	2,139	2	12	20	-	.11	.76	.10	-	-	.0001	.0001	-
Power	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicles	14,507	14	85	133	-	.77	5.16	.70	-	-	.0008	.0004	-
CARGO													
Maintenance-Total	$ 3,652	21%	$ 39	$ 925	-	$ .13	$ 5.08	$ .82	-	-	$.0002	$.0002	-
Roadway	114	1	1	29	-	.00	.16	.03	-	-	.0000	.0000	-
Station	-	-	-	-	-	-	-	-	-	-	-	-	-
Wharves	25	#	0	6	-	.00	.03	.01	-	-	.0000	.0000	-
Power	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicles	3,513	20	38	889	-	.12	4.89	.79	-	-	.0002	.0002	-
PIPE													
Maintenance-Total	$ 48,355	23%	$ 521	-	-	$ .58	-	-	-	-	$.0015/	-	-
Roadway	29,336	14	316	-	-	.35	-	-	-	-	.0009/	-	-
Station	4,015	2	43	-	-	.05	-	-	-	-	.0001/	-	-
Wharves	-	-	-	-	-	-	-	-	-	-	-	-	-
Power	15,004	7	162	-	-	.18	-	-	-	-	.0005/	-	-
Vehicles	-	-	-	-	-	-	-	-	-	-	-	-	-

Less than 1/2%

* Intermediate Wharfage and Dockage.

/ Actual Distance.

Analysis 77.2 Rail Maintenance Unit Costs - 1932

	AGGREGATE (000)	PER CENT OF TOTAL COST	PER ROUTE MILE	PER SCHEDULE	PER SCHEDULE HOUR	SCHEDULE MILE	PER VEHICLE ORIG. OR EQUATED	PER VEHICLE MILE	PER NET TONS	PER NET TON MILE	PER EQUATED TON MILE	PER GROSS TON MILE
ROADWAY	$	%	$	$	$	$	$	$	$	$	$	$
United States	228,146	12	940	42.78	9.35	.58	8.41	.0221	.35	.00097	.00050	.00031
New England	10,515	13	1,378	42.38	12.34	.85	6.52	.0304	.41	.00174	.00090	.00049
Trunk Line	37,242	9	1,727	29.49	8.80	.63	6.10	.0198	.23	.00077	.00040	.00027
Central	50,106	11	1,306	47.22	9.67	.58	7.32	.0204	.29	.00085	.00044	.00028
Pocahontas	12,460	13	1,609	42.21	9.57	.73	7.42	.0223	.18	.00058	.00030	.00025
Southern Freight	29,844	14	856	47.07	9.63	.56	10.13	.0259	.47	.00115	.00059	.00037
Western Trunk Line	40,595	12	686	44.03	8.76	.52	8.49	.0225	.44	.00116	.00060	.00032
Southwestern	21,938	14	615	47.02	9.23	.53	10.44	.0243	.51	.00124	.00064	.00034
Pacific Northwest	12,516	15	631	62.41	10.40	.65	17.23	.0236	.75	.00121	.00063	.00034
Pacific Southwest	12,930-	12	719	53.27	8.49	.52	12.29	.0185	.73	.00110	.00057	.00029
STATION	$	%	$	$	$	$	$	$	$	$	$	$
United States	9,334	#	38	1.75	.38	.02	.34	.0009	.01	.00004	.00002	.00001
New England	511	1	67	2.06	.60	.04	.32	.0015	.02	.00008	.00004	.00002
Trunk Line	2,084	#	97	1.65	.49	.04	.34	.0011	.01	.00004	.00002	.00001
Central	1,816	#	47	1.71	.35	.02	.27	.0007	.01	.00003	.00002	.00001
Pocahontas	328	#	42	1.11	.25	.02	.20	.0006	.00	.00002	.00001	.00001
Southern Freight	1,192	1	34	1.88	.38	.02	.40	.0010	.02	.00005	.00002	.00001
Western Trunk Line	1,684	1	28	1.82	.36	.02	.35	.0009	.02	.00005	.00002	.00001
Southwestern	719	#	20	1.54	.30	.02	.34	.0008	.02	.00004	.00002	.00001
Pacific Northwest	266	#	13	1.33	.22	.01	.37	.0005	.02	.00003	.00001	.00001
Pacific Southwest	734	1	41	3.02	.48	.03	.70	.0011	.04	.00006	.00003	.00002
POWER	$	%	$	$	$	$	$	$	$	$	$	$
United States	204,532	10	842	38.35	8.38	.52	7.54	.0198	.32	.00087	.00045	.00027
New England	7,486	9	981	30.17	8.79	.60	4.64	.0216	.29	.00124	.00064	.00035
Trunk Line	48,803	11	2,263	38.65	11.53	.83	8.00	.0260	.30	.00101	.00052	.00035
Central	46,444	10	1,211	43.77	8.97	.54	6.78	.0189	.27	.00079	.00041	.00026
Pocahontas	11,834	13	1,528	40.09	9.09	.70	7.04	.0212	.17	.00056	.00029	.00024
Southern Freight	22,280	10	639	35.14	7.19	.41	7.56	.0194	.35	.00086	.00044	.00027
Western Trunk Line	31,582	9	533	34.26	6.81	.41	6.60	.0175	.34	.00090	.00047	.00025
Southwestern	15,125	10	424	32.42	6.36	.37	7.20	.0168	.35	.00085	.00044	.00024
Pacific Northwest	9,219	11	465	45.97	7.66	.48	12.69	.0174	.55	.00089	.00046	.00025
Pacific Southwest	11,759	11	654	48.45	7.72	.48	11.18	.0169	.67	.00100	.00052	.00026
VEHICLE	$	%	$	$	$	$	$	$	$	$	$	$
United States	338,750	17	1,395	63.52	13.88	.87	12.48	.0328	.52	.00144	.00074	.00045
New England	11,516	14	1,509	46.42	13.51	.93	7.14	.0333	.44	.00191	.00099	.00054
Trunk Line	69,870	16	3,239	55.33	16.50	1.18	11.45	.0372	.43	.00145	.00075	.00050
Central	89,051	19	2,321	83.92	17.19	1.03	13.01	.0362	.51	.00151	.00078	.00049
Pocahontas	13,920	15	1,797	47.15	10.69	.82	8.29	.0249	.20	.00065	.00034	.00028
Southern Freight	33,133	15	951	52.25	10.70	.62	11.24	.0288	.53	.00127	.00066	.00041
Western Trunk Line	61,914	19	1,046	67.15	13.36	.80	12.94	.0342	.67	.00176	.00091	.00049
Southwestern	27,381	18	768	58.69	11.52	.66	13.03	.0303	.64	.00154	.00080	.00043
Pacific Northwest	12,799	15	646	63.82	10.63	.66	17.62	.0242	.77	.00124	.00064	.00034
Pacific Southwest	19,166	17	1,066	78.97	12.58	.78	18.22	.0275	1.09	.00163	.00084	.00043
WHARF	$	%	$	$	$	$	$	$	$	$	$	$
United States	4,422	#	18	.83	.18	.01	.16	.0004	.01	.00002	.00001	.00001
New England	117	#	15	.47	.14	.01	.07	.0003	ø	.00002	.00001	.00001
Trunk Line	1,447	#	67	1.15	.34	.02	.24	.0008	.01	.00003	.00002	.00001
Central	606	#	16	.57	.12	.01	.09	.0002	ø	.00001	.00001	**
Pocahontas	491	1	63	1.67	.38	.03	.29	.0009	.01	.00002	.00001	.00001
Southern Freight	286	#	8	.45	.09	.01	.10	.0002	ø	.00001	.00001	**
Western Trunk Line	1,325	#	22	1.44	.29	.02	.28	.0007	.01	.00004	.00002	.00001
Southwestern	58	#	2	.13	.02	ø	.03	.0001	ø	**	**	**
Pacific Northwest	24	#	1	.12	.02	ø	.03	*	ø	**	**	**
Pacific Southwest	68	#	4	.28	.04	ø	.06	.0001	ø	.00001	**	**

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* Less than .00005.
**Less than . 000005.
# Less than .1/2%.
ø Less than .005.

Analysis 77.3 Water Maintenance Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE GROSS	PER TON MILE NET RAIL	PER TON MILE NET WATER	PER TON MILE EQUATED
CARLOT													
ROADWAY													
United States	$ 1,878	2%	$ 11	$ 17	-	$ .10	$ .67	$ .09	-	-	$.0001	$.0001	-
Atlantic Coast	284	1	13	19	-	.06	.40	.05	-	-	.0002	.0001	-
Atlantic Gulf	848	6	32	742	-	.37	2.99	.30	-	-	.0003	.0003	-
Intercoastal	327	1	4	752	-	.08	.41	.06	-	-	.0000	.0000	-
Inland Waterways	185	2	20	273	-	.08	.83	.22	-	-	.0001	.0001	-
Great Lakes	98	1	9	7	-	.03	.42	.05	-	-	.0001	.0001	-
Pacific Coast	135	1	10	1	-	.05	.24	.04	-	-	.0001	.0001	-
WHARVES													
United States	$ 2,139	2%	$ 12	$ 20	-	$ .11	$ .76	$ .10	-	-	$.0001	$.0001	-
Atlantic Coast	871	4	39	61	-	.19	1.22	.15	-	-	.0005	.0004	-
Atlantic Gulf	375	3	14	328	-	.16	1.32	.13	-	-	.0001	.0001	-
Intercoastal	493	1	6	1,135·	-	.13	.61	.08	-	-	.0000	.0000	-
Inland Waterways	284	3	30	420	-	.12	1.28	.34	-	-	.0002	.0001	-
Great Lakes	67	1	6	5	-	.02	.28	.04	-	-	.0001	.0001	-
Pacific Coast	48	1	3	1	-	.02	.09	.01	-	-	.0000	.0000	-
VEHICLES													
United States	$ 14,507	14%	$ 85	$ 133	-	$ .77	$ 5.16	$ .70	-	-	$.0008	$.0004	-
Atlantic Coast	3,311	13	148	232	-	.71	4.63	.58	-	-	.0019	.0017	-
Atlantic Gulf	2,918	22	112	2,555	-	1.28	10.31	1.03	-	-	.0011	.0009	-
Intercoastal	4,143	11	47	9,545	-	1.06	5.16	.70	-	-	.0004	.0002	-
Inland Waterways	1,598	19	168	2,364	-	.70	7.20	1.89	-	-	.0011	.0007	-
Great Lakes	1,210	16	111	95	-	.40	5.14	.64	-	-	.0011	.0009	-
Pacific Coast	1,326	14	94	16	-	.51	2.40	.38	-	-	.0013	.0014	-
CARGO													
ROADWAY													
United States	$ 114	1%	$ 1	$ 29	-	$ .00	$ .16	$ .03	-	-	$.0000	$.0000	-
Atlantic Coast	69	2	4	133	-	.02	.08	.13	-	-	.0000	.0000	-
Atlantic Gulf	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
Intercoastal	23	13	4	1,434	-	.47	.67	.12	-	-	.0002	.0001	-
Inland Waterways	1	0	0	3	-	.00	.01	.00	-	-	.0000	.0000	-
Great Lakes	21	0	0	9	-	.00	.06	.01	-	-	.0000	.0000	-
Pacific Coast	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
WHARVES													
United States	$ 25	0%	$ 0	$ 6	-	$ .00	$ .03	$ .01	-	-	$.0000	$.0000	-
Atlantic Coast	1	0	0	2	-	.00	.01	.00	-	-	.0000	.0000	-
Atlantic Gulf	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
Intercoastal	14	1	2	856	-	.28	.41	.07	-	-	.0000	.0000	-
Inland Waterways	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
Great Lakes	9	0	0	4	-	.00	.02	.00	-	-	.0000	.0000	-
Pacific Coast	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
VEHICLES													
United States	$ 3,513	20%	$ 38	$ 889	-	$ .12	$ 4.89	$ .79	-	-	$.0002	$.0002	-
Atlantic Coast	871	27	47	1,681	-	.26	9.61	1.59	-	-	.0004	.0004	-
Atlantic Gulf	224	18	24	5,882	-	.43	7.09	1.39	-	-	.0003	.0007	-
Intercoastal	51	28	8	3,171	-	1.05	1.48	.26	-	-	.0004	.0002	-
Inland Waterways	69	7	17	301	-	.12	1.02	.28	-	-	.0001	.0001	-
Great Lakes	2,240	20	45	1,027	-	.09	6.22	.79	-	-	.0001	.0001	-
Pacific Coast	59	16	10	60	-	.36	.44	.13	-	-	.0009	.0009	-

SECTION 77. MAINTENANCE

Analysis 77.4 Cost of Pipe Maintenance

	AGGREGATE (000)	REVENUE RATE	PER ROUTE MILE	PER NET TON	PER NET TON MILE
TOTAL MAINTENANCE					
United States	$ 48,355	23%	$ 521	$ .58	$ .0015
North Atlantic	2,647	28	180	.94	.0025
Great Lakes-Southwest	22,170	22	495	.88	.0011
Gulf-Southwest	23,538	23	707	.43	.0025
ROADWAY					
United States	$ 29,336	14%	$ 316	$ .35	$ .0009
North Atlantic	2,133	23	145	.76	.0020
Great Lakes-Southwest	14,108	14	315	.56	.0007
Gulf-Southwest	13,095	13	394	.24	.0014
STATION					
United States	$ 4,015	2%	$ 43	$ .05	$ .0001
North Atlantic	107	1	7	.04	.0001
Great Lakes-Southwest	1,525	2	34	.06	.0001
Gulf-Southwest	2,382	3	72	.04	.0003
POWER					
United States	$ 15,004	7%	$ 162	$ .18	$ .0005
North Atlantic	406	4	28	.14	.0004
Great Lakes-Southwest	6,537	7	146	.26	.0003
Gulf-Southwest	8,061	8	242	.15	.0009

SECTION 80. POWER MAINTENANCE COSTS

Analysis 80.1 Rail Power Maintenance Costs by Types of Trains - 1932 (Gross Ton Mile Basis)

	COST OF POWER MAINTENANCE PER TRAIN MILE*									
	ALL TRAINS		MAIN LINE TRAINS						BRANCH LINE TRAINS	
			MANIFEST TRAINS		DRAG TRAINS		WAY TRAINS			
	GROSS TONS	COST	GROSS TONS	COST	GROSS TONS	COST	GROSS TONS	COST	GROSS TONS	COST
UNITED STATES	1,910	$ .37	2,123	$ .45	2,101	$ .46	1,029	$ .23	667	$ .15
NEW ENGLAND	1,725	$ .43	2,353	$ .58	2,292	$ .57	837	$ .22	437	$ .11
Connecticut	2,062	.53	2,464	.64	2,434	.62	627	.19	449	.12
Maine	1,438	.36	1,985	.53	2,321	.56	1,218	.32	431	.11
Massachusetts	1,680	.43	2,454	.61	2,162	.56	808	.23	453	.11
New Hampshire	1,953	.54	2,948	.79	2,561	.68	706	.19	443	.12
Rhode Island	2,128	.44	2,180	.45	3,075	.63	560	.11	314	.06
Vermont	1,465	.29	2,049	.38	1,718	.36	527	.11	405	.08
TRUNK LINE	2,369	$ .53	2,983	$ .61	2,775	$ .66	1,395	$ .34	974	$ .27
Delaware	1,692	.31	3,042	.55	1,380	.25	1,152	.21	669	.12
Maryland	2,332	.51	2,658	.56	3,692	.90	1,155	.27	781	.17
New Jersey	1,992	.60	2,467	.71	3,378	1.04	1,331	.44	848	.27
New York	2,397	.54	3,187	.68	2,596	.59	1,209	.30	1,097	.35
Pennsylvania	2,428	.51	2,986	.56	2,871	.69	1,614	.35	976	.26
CENTRAL	2,110	$ .35	2,326	$ .39	2,597	$ .42	1,122	$ .20	764	$ .14
Illinois	1,886	.28	2,089	.31	2,220	.33	937	.15	653	.10
Indiana	2,139	.33	2,590	.38	2,318	.38	1,053	.17	698	.10
Michigan	1,722	.36	2,122	.43	2,078	.44	780	.17	600	.12
Ohio	2,420	.42	2,552	.45	3,091	.51	1,351	.25	1,083	.22
POCAHONTAS	2,937	$ .53	3,021	$ .50	3,910	$ .72	1,173	$ .26	1,164	$ .22
Virginia	2,784	.56	3,429	.54	3,311	.74	868	.21	754	.25
West Virginia	3,111	.50	2,581	.45	4,751	.69	1,516	.33	1,363	.21
SOUTHEASTERN	1,522	$ .32	1,913	$ .40	1,911	$ .39	874	$ .20	597	$ .14
Alabama	1,362	.31	1,923	.43	1,599	.37	883	.22	671	.13
Florida	1,113	.33	1,969	.57	1,103	.34	1,048	.31	642	.20
Georgia	1,368	.27	1,958	.37	1,515	.31	918	.19	548	.10
Kentucky	2,149	.36	2,126	.36	2,600	.43	924	.15	784	.10
Mississippi	1,443	.25	1,933	.31	1,590	.30	828	.17	501	.08
North Carolina	1,442	.35	1,874	.45	1,777	.44	695	.17	464	.12
South Carolina	1,251	.37	1,536	.45	1,607	.49	718	.23	567	.13
Tennessee	1,438	.32	1,724	.39	1,700	.38	925	.21	529	.15
WESTERN TRUNK LINE	1,620	$ .30	2,242	$ .39	1,954	$ .35	871	$ .21	567	$ .12
Iowa	1,516	.27	1,875	.33	1,805	.31	753	.15	508	.12
Kansas	1,712	.31	2,418	.42	1,937	.34	943	.20	684	.15
Minnesota	1,582	.38	2,353	.49	2,290	.43	918	.38	516	.13
Missouri	1,736	.29	2,185	.34	2,214	.38	845	.18	513	.09
Nebraska	1,751	.31	2,674	.44	1,801	.36	815	.15	573	.12
North Dakota	1,385	.31	2,478	.56	1,944	.39	860	.21	606	.15
South Dakota	1,281	.26	2,032	.39	1,668	.33	975	.21	468	.09
Wisconsin	1,643	.29	2,332	.39	1,994	.35	865	.16	523	.10
SOUTHWESTERN	1,556	$ .30	2,138	$ .39	1,899	$ .32	867	$ .20	651	$ .13
Arkansas	1,540	.26	2,030	.33	1,833	.28	627	.15	584	.10
Louisiana	1,375	.28	1,873	.37	1,905	.38	942	.20	491	.10
New Mexico	2,070	.37	2,748	.48	2,008	.35	1,120	.23	763	.14
Oklahoma	1,488	.29	2,038	.38	1,994	.36	899	.22	710	.15
Texas	1,542	.29	2,132	.41	1,814	.28	876	.19	670	.14
PACIFIC NORTHWEST	1,926	$ .41	2,848	$ .61	2,152	$ .42	1,089	$ .24	579 $	.14
Idaho	1,763	.28	2,800	.45	2,595	.42	915	.14	507	.08
Montana	2,283	.50	3,226	.76	2,495	.50	1,350	.29	636	.14
Oregon	1,360	.36	2,427	.62	1,933	.55	1,006	.28	522	.14
Washington	1,479	.40	2,362	.71	1,769	.41	928	.23	636	.18
Wyoming	2,554	.43	3,051	.51	2,093	.35	1,332	.22	776	.13
PACIFIC SOUTHWEST	1,826	$ .40	2,436	$ .51	1,764	$ .43	921	$ .22	529 $	.14
Arizona	2,392	.40	2,793	.47	2,204	.37	1,079	.18	1,138	.19
California	1,834	.40	2,559	.56	2,051	.44	940	.22	592	.14
Colorado	994	.38	1,314	.47	898	.41	839	.24	220	.16
Nevada	2,848	.41	3,498	.49	2,456	.37	883	.19	436	.06
Utah	2,064	.43	2,576	.48	2,063	.69	936	.18	481	.09

* Road Power only.

SECTION 80. POWER MAINTENANCE COSTS

Analysis 80.2 Rail Power Maintenance Costs by Types of Trains - 1932 (Locomotive Ton Mile Basis)

	COST OF POWER MAINTENANCE PER TRAIN MILE*									
	ALL TRAINS		MAIN LINE TRAINS						BRANCH LINE TRAINS	
			MANIFEST TRAINS		DRAG TRAINS		WAY TRAINS			
	GROSS TONS	COST	GROSS TONS	COST	GROSS TONS	COST	GROSS TONS	COST	GROSS TONS	COST
UNITED STATES	1,910	$ .37	2,123	$ .44	2,101	$ .40	1,029	$ .30	667	$ .22
NEW ENGLAND	1,725	$ .43	2,353	$ .53	2,292	$ .51	837	$ .30	437	$ .24
Connecticut	2,062	.53	2,464	.61	2,434	.58	627	.34	449	.21
Maine	1,438	.36	1,985	.42	2,321	.50	1,218	.28	431	.24
Massachusetts	1,680	.43	2,454	.59	2,162	.48	808	.33	453	.21
New Hampshire	1,953	.54	2,948	.59	2,561	.67	706	.28	443	.27
Rhode Island	2,128	.44	2,180	.47	3,075	.51	560	.28	314	.19
Vermont	1,465	.29	2,049	.38	1,718	.30	527	.17	405	.22
TRUNK LINE	2,369	$ .53	2,983	$ .65	2,775	$ .47	1,395	$ .43	974	$ .35
Delaware	1,692	.31	3,042	.34	1,380	.32	1,152	.29	669	.28
Maryland	2,332	.51	2,658	.53	3,692	.67	1,155	.43	781	.31
New Jersey	1,992	.60	2,467	.65	3,378	.66	1,331	.56	848	.53
New York	2,397	.54	3,187	.65	2,596	.57	1,209	.41	1,097	.28
Pennsylvania	2,428	.51	2,986	.56	2,871	.56	1,614	.43	976	.38
CENTRAL	2,110	$ .35	2,326	$ .36	2,597	$ .41	1,122	$ .28	764	$ .20
Illinois	1,886	.28	2,089	.31	2,220	.28	937	.22	653	.18
Indiana	2,139	.33	2,590	.37	2,318	.34	1,053	.25	698	.16
Michigan	1,722	.36	2,122	.39	2,078	.37	780	.28	600	.27
Ohio	2,420	.42	2,552	.44	3,091	.43	1,351	.36	1,083	.28
POCAHONTAS	2,937	$ .53	3,021	$ .55	3,910	$ .60	1,173	$ .41	1,164	$ .40
Virginia	2,784	.56	3,429	.62	3,311	.62	868	.37	754	.40
West Virginia	3,111	.50	2,581	.40	4,751	.58	1,516	.40	1,363	.41
SOUTHEASTERN	1,522	$ .32	1,913	$ .35	1,911	$ .35	874	$ .27	597	$ .26
Alabama	1,362	.31	1,923	.40	1,599	.33	883	.25	671	.22
Florida	1,113	.33	1,969	.36	1,103	.33	1,048	.35	642	.33
Georgia	1,368	.27	1,958	.30	1,515	.29	918	.25	548	.21
Kentucky	2,149	.36	2,126	.44	2,600	.36	924	.27	784	.23
Mississippi	1,443	.25	1,933	.25	1,590	.29	828	.25	501	.18
North Carolina	1,442	.35	1,874	.39	1,777	.40	695	.26	464	.25
South Carolina	1,251	.37	1,536	.44	1,607	.46	718	.24	567	.29
Tennessee	1,438	.32	1,724	.36	1,700	.36	925	.26	529	.23
WESTERN TRUNK LINE	1,620	$ .30	2,242	$ .37	1,954	$ .31	871	$ .27	567	$ .20
Iowa	1,516	.27	1,875	.33	1,805	.26	753	.19	508	.19
Kansas	1,712	.31	2,418	.38	1,937	.35	943	.21	684	.18
Minnesota	1,582	.38	2,353	.46	2,290	.49	918	.31	516	.25
Missouri	1,736	.29	2,185	.32	2,214	.23	845	.24	513	.16
Nebraska	1,751	.31	2,674	.42	1,801	.31	815	.21	573	.21
North Dakota	1,385	.31	2,478	.40	1,944	.35	860	.28	606	.23
South Dakota	1,281	.26	2,032	.38	1,668	.24	975	.26	468	.18
Wisconsin	1,643	.29	2,332	.35	1,994	.29	865	.23	523	.21
SOUTHWESTERN	1,556	$ .30	2,138	$ .34	1,899	$ .34	867	$ .23	651	$ .20
Arkansas	1,540	.26	2,030	.32	1,833	.31	627	.11	584	.16
Louisiana	1,375	.28	1,873	.30	1,905	.39	942	.25	491	.18
New Mexico	2,070	.37	2,748	.41	2,008	.39	1,120	.35	763	.24
Oklahoma	1,488	.29	2,038	.34	1,994	.31	899	.26	710	.24
Texas	1,542	.29	2,132	.32	1,814	.31	876	.24	670	.22
PACIFIC NORTHWEST	1,926	$ .41	2,848	$ .54	2,152	$ .46	1,089	$ .29	579	$ .19
Idaho	1,763	.28	2,800	.44	2,595	.41	915	.15	507	.08
Montana	2,283	.50	3,226	.60	2,495	.57	1,350	.39	636	.27
Oregon	1,360	.36	2,427	.61	1,933	.45	1,006	.32	522	.17
Washington	1,479	.40	2,362	.50	1,769	.46	928	.33	636	.27
Wyoming	2,554	.43	3,051	.50	2,093	.38	1,332	.21	776	.12
PACIFIC SOUTHWEST	1,826	$ .40	2,436	$ .47	1,764	$ .40	921	$ .31	529	$ .23
Arizona	2,392	.40	2,793	.43	2,204	.39	1,079	.33	1,138	.34
California	1,834	.40	2,559	.48	2,051	.44	940	.33	592	.21
Colorado	994	.38	1,314	.44	898	.39	839	.36	220	.16
Nevada	2,848	.41	3,498	.44	2,456	.43	883	.30	436	.20
Utah	2,064	.43	2,576	.54	2,063	.42	936	.20	481	.11

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* Road Power Only.

SECTION 81. MODERNIZATION

Analysis 81.1 Summary of Specifications of Single Power Car (Container Units)

SPECIFICATION	AUTOMATIC GEAR CORPORATION MECHANICAL 4-CONTAINERS	BESLER SYSTEMS MECHANICAL 4-CONTAINERS	BESLER SYSTEMS STEAM 4-CONTAINERS	BESLER SYSTEMS STEAM 4-CONTAINERS	BROWN GURNEY CORPORATION MECHANICAL 6-CONTAINERS	CLARK EQUIPMENT COMPANY HYDRAULIC 5-CONTAIN ERS	INGERSOLL RAND COMPANY DIESEL ELEC-TRIC 3-CONTAINERS	RYAN CAR COMPANY STEAM 3-CONTAINERS	WESTINGHOUSE ELECTRIC & MFG. CO. DIESEL ELECTRIC 5-CONTAINERS
TRACTIVE POWER									
Horsepower									
Aggregate /	400	280	525	1,050	700	570	530	500	530
Wheel //	360	220	500	1,000	560	456	424	-	30,500
Tractive Effort - Lbs. (000)	30	10	13	25	20	14	34	-	31
TONNAGE RATING #									
AT 60 MILES PER HOUR		55M/H							
Car Tons	112	31	220	639	256	-	99	195	137
Net Tons	87	0	170	464	206	-	74	145	112
Trailing Cars **	1	0	2	7	2	-	1	2	1
AT 50 MILES PER HOUR									
Car Tons	254	83	408	810	460	348	312	393	303
Net Tons	204	58	308	585	335	248	237	293	228
Trailing Cars **	2	1	4	9	5	4	3	4	3
AT 40 MILES PER HOUR									
Car Tons	475	227	705	1,580	796	620	564	660	555
Net Tons	350	177	505	1,130	571	445	414	435	405
Trailing Cars **	5	2	8	18	9	7	6	7	6
WEIGHT OF POWER UNIT * (000)	54	66	70	75	79	70	132	130	115
FUEL									
Kind	Diesel	Diesel	Oil	Oil	Diesel	Diesel	Diesel	Oil	Diesel
MILEAGE									
Daily	300	300	300	300	300	300	300	300	300
Annual (000)	100	100	100	100	100	100	100	100	100
INVESTMENT ##									
Initial Cost (000)	$ 43	$ 19	$ 40	$ 60	$ 33	$ 28	$ 40	$ 59	$ 45
Life in Years	15	15	15	15	10	10	20	20	25
Life in Miles (000)	1,500	1,500	1,500	1,500	1,000	1,000	2,000	2,000	2,500
OPERATING COST PER MILE, CENTS ##									
Power Maintenance									
Repairs	1.00	.937	1.375	2.00	4.00	3.00	3.20	2.10	8.10
Depreciation	3.00	1.250	1.831	2.67	4.00	2.80	2.00	2.95	2.00
Total	4.00	2.187	3.206	4.67	8.00	5.80	5.20	5.05	10.10
Transportation									
Fuel ø	1.00	.720	3.60	7.20	2.64	2.25	1.20	5.700	5.00
Lubrication	.10	.150	.09	.13	1.25	.22	.30	.315	1.50
Supplies	.06	.250	.25	.25	1.00	.30	.05	.200	.50
Total	1.16	1.120	3.94	7.58	4.89	2.77	1.55	6.215	7.00
Total Operating Costs	5.16	4.307	7.146	12.25	12.89	8.57	6.75	11.265	17.10

# Based on level tangent track. Trailing load only, not including container carload.

ø Based on tons of coal or gallons of oil per horsepower hour.

** Container Car - Gross Weight 87 1/2 tons, Tare 25 tons including containers.

/ Prime Mover Horsepower, including that required for auxiliaries.

// Net horsepower for traction.

## Actual submissions from manufacturers.

* No containers on motive power unit.

Analysis 81.2 Summary of Specifications of Small Steam Power Units (Locomotives)*

SPECIFICATION					BETHLEHEM STEEL COMPANY FOUR WHEELS		
	BALDWIN LOCOMOTIVE WORKS 4-4-0	BALDWIN LOCOMOTIVE WORKS 4-4-0	BALDWIN LOCOMOTIVE WORKS 4-4-0	BESLER SYSTEMS DOUBLE TRUCK	TWO POWER TRUCKS	ONE POWER TRUCK AND ONE AUXILIARY POWER TRUCK	LIMA LOCOMOTIVE WORKS 4-4-0
TRACTIVE POWER							
Horsepower							
Aggregate ⁄	644	936	1,473	2,100	962	735	850
Wheel ⁄⁄	-	-	-	2,000	-	-	-
Tractive Effort -- Lbs. (000)	14	20	25	60	12	14	12
TONNAGE RATING #							
At 60 Miles per Hour							
Car Tons	-	-	-	1,475	524	202	245
Net Tons	-	-	-	1,075	374	152	195
Trailing Cars **	-	-	-	16	6	2	2
At 50 Miles per Hour							
Car Tons	150	300	500	2,150	994	386	637
Net Tons	125	225	375	1,550	719	286	462
Trailing Cars **	1	3	5	24	11	4	7
At 40 Miles per Hour							
Car Tons	826	1,310	2,230	3,290	1,280	638	875
Net Tons	591	935	1,605	2,390	930	463	625
Trailing Cars **	9	15	25	36	14	7	10
WEIGHT OF UNIT (000)	91	100	150	240	190	190	-
FUEL	Oil	Oil	Oil	-	Oil	Oil	Oil
Kind	Coal	Coal	Coal	Oil	Coal	Coal	Coal ###
Consumption - Gals. Hour ϕ	2.1	2.61	2.71	0.15	(2.7 lbs. or) (0.337 gals.)	(3.4 lbs. or) (0.425 gals.)	
MILEAGE							
Daily	300	300	300	300	300	-	300
Annual (000)	75	75	75	100	100	-	100
INVESTMENT ##							
Initial Cost (000)	$ 25	$ 30	$ 35	$ 85	$ 35	$ 35	$ 27
Life in Years	18	16	14	15	15	15	20
Life in Miles (000)	1,350	1,200	1,050	1,500	1,500	1,500	2,000
OPERATING COSTS PER MILE, CENTS ##							
Power Maintenance							
Repairs	6.4	9.00	13.65	3.8	3.90	3.90	9.00
Depreciation	1.85	2.50	3.33	5.07	3.50	3.50	1.37
Total	8.25	11.50	16.98	8.87	7.40	7.40	10.37
Transportation							
Fuel	3.00	5.419	8.88	14.40	8.60	4.50	5.50
Lubrication	.005	.005	.005	.25	.05	.05	-
Supplies	.003	.003	.003	.25	.05	.05	-
Total	4.338	5.427	8.96	14.90	8.70	4.60	5.50
Total Operating Costs	12.588	16.927	25.94	23.77	16.10	12.00	15.87

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* No containers on motive power unit.
# Based on level tangent track.
ϕ Based on tons of coal or gallons of oil per horsepower hour.
** Container.Car - Gross Weight 87-1/2 tons, Tare 25 tons including containers.
⁄ Prime mover horsepower, including that required for auxiliaries.
⁄⁄ Net horsepower for traction.
## Actual submissions from manufacturers.
### 95 pounds coal per 1000 gross ton miles; 8.4 gallons oil per 100 pounds coal.

Analysis 81.3 Summary of Specifications of Diesel Power Units *

SPECIFICATION	DIESEL-ELECTRIC			DIESEL-MECHANICAL		
	BALDWIN LOCOMOTIVE WORKS LOCOMOTIVE	INGERSOLL-RAND COMPANY RAIL CAR	INGERSOLL-RAND COMPANY LOCOMOTIVE	AUTOMATIC GEAR CORPORATION LOCOMOTIVE	AUTOMATIC GEAR CORPORATION LOCOMOTIVE	CLARK *** EQUIPMENT COMPANY LOCOMOTIVE
TRACTIVE POWER						
Horsepower						
Aggregate ⁄	600	600	800	400	600	1,600
Wheel ⁄ ⁄	450	480	640	360	540	1,280
Tractive Effort - Lbs. (000)	29	36	40	30	50	37
TONNAGE RATING #						
At 60 Miles per Hour						
Car Tons	-	210	335	132	267	901
Net Tons	-	160	260	107	182	651
Trailing Cars **	-	2	3	1	3	10
At 50 Miles per Hour	45 M/H					
Car Tons	463	388	568	273	470	1,350
Net Tons	338	288	418	198	345	975
Trailing Cars **	5	4	6	3	5	15
At 40 Miles per Hour						
Car Tons	620	675	950	497	793	2,085
Net Tons	445	400	700	372	568	1,510
Trailing Cars **	7	7	10	5	9	23
WEIGHT OF UNIT (000)	200	180	200	120	160	154
FUEL						
Kind	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel
Consumption - Gals. Hr.ϕ	0.34	-	-	.016	.015	.616
MILEAGE						
Daily	300	350	350	300	300	300
Annual (000)	75	101	101	100	100	100
INVESTMENT ##						
Initial Cost (000)	$ 110	$ 85	$ 110	$ 38	$ 65	$ 97
Life in Years	23	23	21	15	15	15
Life in Miles (000)	1,750	-	-	1,500	1,500	1,500
OPERATING COSTS PER MILE, CENTS ##						
Power Maintenance						
Repairs	3.33	3.98	5.00	1.00	1.00	6.00
Depreciation	6.88	3.38	4.37	2.50	4.33	9.70
Total	9.710	7.36	9.37	3.50	5.33	15.00
Transportation						
Fuel	3.75	3.60	4.50	1.00	1.00	6.75
Lubrication	.025	.32	.53	.10	.13	.675
Supplies	.003	.30	.30	.06	.06	.300
Total	3.778	5.72	6.83	1.16	1.19	7.725
Total Operating Costs	13.488	13.09	16.20	4.66	6.52	23.425

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* No containers on motive power unit.
# Based on level tangent track.
ϕ Based on tons of coal or gallons of oil per horsepower hour.
** Container Car - Gross Weight 87-1/2 tons, Tare 25 tons including containers.
***Diesel-Hydraulic.
⁄ Prime mover horsepower, including that required for auxiliaries.
⁄⁄ Net horsepower for traction.
## Actual submissions from manufacturers.

Analysis 81.4 Fixed and Variable Line Costs - Indicated by Submissions for Freight Power Cars

	AUTO-MATIC GEAR COR-PORA-TION MECHAN-ICAL	BESLER SYSTEM MECHAN-ICAL	BESLER SYSTEM 500 H.P. STEAM	BESLER SYSTEM 1000 H.P. STEAM	BROWN GURVEY CORPOR-ATION MECHAN-ICAL	CLARK EQUIP-MENT COM-PANY HYDRAU-LIC	INGER-SOLL RAND COM-PANY DIESEL ELEC-TRIC	RYAN CAR COM-PANY STEAM	WESTING-HOUSE ELEC-TRIC & MFG. CO DIESEL ELEC-TRIC
Capacity	Based on Maximum Speed of 50 miles per hour on level, tangent track.								
Total Revenue Cars	3	2	5	10	6	5	4	5	4
Gross Tonnage - Total	259	177.5	442	882.5	562.5	456.3	370.7	457.7	390.5
Power Car	84	90	90	95	125	106.3	108.2	107.7	125
Trailers	.175	87.5	350	787.5	437.5	350	262.5	350	265.5
Containers - Total	4	9	24	49	31	25	18	23	20
Power Car	4	4	4	4	6	5	3	3	5
Trailers	10	5	20	45	25	20	15	20	15
Net Tonnage - Total	175	112.5	300	612.5	387.5	312.5	225	287.5	250
Power Car	50	50	50	50	75	62.5	37.5	37.5	62.5
Trailers	125	62.5	250	562.5	312.5	250	187.5	250	187.5
Tractive Effort	254	112.5	358	635	410	348	274.5	393	290.5
Average Load - Loaded Cars (60%)	1.8	1.2	3.0	6.0	3.6	3.0	2.4	3.0	2.4
Loaded Containers (60%)	8.4	5.4	14.4	29.4	18.6	15.0	10.8	13.8	12.0
Net Tonnage *	75.6	48.6	129.6	264.6	167.4	135.0	97.2	124.2	108.0
Variable Line Cost per Train Mile -									
Power Maintenance	4.00	2.19	3.21	4.67	8.00	5.80	5.20	5.05	10.10
Power Transportation	1.16	1.12	3.94	7.58	4.89	3.07	1.55	6.21	7.00
Wages	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33
Total	18.49	17.64	20.48	25.58	26.22	22.20	20.08	24.59	30.43
Total Line Cost - Per Loaded Car Mile -									
Variable #	10.25	14.70	6.83	4.25	7.30	7.40	8.35	8.16	12.65
Fixed ∅	10.92	10.92	10.92	10.92	10.92	10.92	10.92	10.92	10.92
Total	21.17	25.62	17.75	15.17	18.22	18.32	19.27	19.08	23.57
Per Train Mile $	38.11	30.74	53.25	60.68	65.59	54.96	46.15	57.24	56.90
Per Net Ton Mile ■	5.05	6.09	4.11	2.29	3.91	4.07	4.75	4.61	5.27
Capacity	Based on Maximum Speed of 60 miles per hour on level, tangent track.								
Total Revenue Cars	2	1	3	8	3	3	2	3	3
Gross Tonnage - Total	171.5	90.0	267.0	707.5	300.0	281.2	195.7	370.0	215.5
Power Car	84	90	92	95	125	106.2	108.2	195	128
Trailers	87.5	-	175	612.5	175	175	87.5	175	87.5
Containers - Total	9	14	14	39	16	15	8	13	10
Power Car	4	4	4	4	6	5	3	3	5
Trailers	5	-	10	35	10	10	5	10	5
Net Tonnage - Total	112.5	50	175	487.5	200	187.5	100	162.5	125
Power Car	50	50	50	50	75	62.5	37.5	37.5	62.5
Trailers	62.5	-	125	437.5	125	125	62.5	125	62.5
Tractive Effort	137	71	220	514	381	210.5	111.5	182.5	174.5
Average Load - Loaded Cars (60%)	1.2	0.6	1.8	4.8	1.8	1.8	1.2	1.8	1.8
Loaded Containers (60%)	5.4	2.4	8.4	23.4	9.6	9.0	4.8	7.8	6.0
Net Tonnage *	48.6	21.6	75.6	163.8	86.4	81.0	43.2	70.2	54.0
Variable Line Cost - Per Train Mile									
Power Maintenance	4.00	2.19	3.21	4.67	8.00	5.80	5.20	5.05	10.10
Power Transportation	1.16	1.12	3.94	7.58	4.89	3.07	1.55	6.21	7.00
Wages	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33
Total	18.49	16.64	20.48	25.58	26.22	22.20	20.08	24.59	30.43
Total Line Cost - Per Loaded Car Mile									
Variable #	15.41	16.64	11.38	5.33	14.57	12.34	16.73	13.66	16.91
Fixed ∅	10.92	10.92	10.92	10.92	10.92	10.92	10.92	10.92	10.92
Total	26.33	27.56	22.30	16.25	25.49	23.26	27.65	24.58	27.83
Per Train Mile $	31.59	**27.56	40.13	77.99	45.88	41.86	33.18	44.25	50.09
Per Net Ton Mile ■	6.50	12.80	5.31	4.76	5.31	5.17	7.68	6.30	9.27

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* Loaded Containers @ 9 tons each.
# Variable Train Mile Cost divided by number of loaded cars.
∅ Average Fixed Line Cost of Rail Branch Line Way Trains.
$ Product, of Car Mile Cost and number of Loaded Cars.
■ Quotient of Train Mile Cost and Average Load of Net Tonnage.
** Cost is based on running one car instead of the theortical 0.6 car.

Analysis 81.5 Fixed and Variable Line Costs - Indicated by Submissions for Light Steam Locomotives

	BALDWIN LOCO-MOTIVE WORKS	BALDWIN LOCO-MOTIVE WORKS	BALDWIN LOCO-MOTIVE WORKS	BESLER SYSTEMS 2000 H.P.	BETH-LEHEM STEEL COM-PANY 962 H.P.	BETH-LEHEM STEEL COM-PANY 735 H.P.	LIMA LOCO-MOTIVE WORKS	RYAN CAR COM-PANY
Capacity	Based on Maximum Speed of 50 Miles per hour on level, tangent track.							
Total Revenue Cars	1	3	5	24	11	4	7	17
Gross Tonnage - Total	133.0	312.5	512.5	2220	1057.5	445	682.5	1572.5
Power Car	45.5	50	75	120	95	95	70	85
Trailers	87.5	262.5	437.5	2100	962.5	350	612.5	1487.5
Containers - Total	5	15	25	120	55	20	35	85
Power Car	-	-	-	-	-	-	-	-
Trailers	5	15	25	120	55	20	35	85
Net Tonnage - Total	62.5	187.5	312.5	1500	687.5	250	437.5	1122.5
Power Car	-	-	-	-	-	-	-	-
Trailers	62.5	187.5	312.5	1500	687.5	250	437.5	1122.5
Tractive Effort	125	225	375	1550	719	286	462	1125
Average Load - Loaded Cars (60%)	0.6	1.8	3.0	14.4	6.6	2.4	4.2	10.2
Loaded Containers (60%)	3.0	9.0	15.0	72.0	33.0	12.0	21.0	51.0
Net Tonnage *	27.0	81.0	135.0	648.0	297.0	108.0	189.0	459.0
Variable Line Cost - Per Train Mile -								
Power Maintenance	8.25	11.50	16.98	8.87	7.40	7.40	10.37	7.35
Power Transportation	4.35	5.42	8.96	14.90	8.70	4.50	5.50	13.80
Wages	13.33	13.33	13.33	13.33	13.33	13.33	13.33	13.33
Total	25.91	30.25	39.27	37.10	29.43	25.23	29.20	34.48
Total Line Cost - Per Loaded Car Mile -								
Variable #	42.35	16.75	13.09	2.58	4.46	10.55	6.94	3.50
Fixed ∅	10.92	10.92	10.92	10.92	10.92	10.92	10.92	10.92
Total	53.27	27.67	24.01	13.50	15.38	21.47	17.86	14.42
Per Train Mile $	31.96	49.61	72.03	194.45	101.51	51.60	75.01	147.08
Per Net Ton Mile ■	11.838	6.125	5.336	3.000	3.418	4.778	3.970	3.204
Capacity	Based on Maximum Speed of 60 Miles per hour on level, tangent track.							
Total Revenue Cars				16	6	2	2	
Gross Tonnage - Total	Speed Too High			1220	520	270	245	Speed
Power Car				120	95	95	70	
Trailers				1100	425	175	175	Too
Containers - Total				80	30	10	10	
Power Car				-	-	-	-	High
Trailers				80	30	10	10	
Net Tonnage - Total				1000	375	125	125	
Power Car				-	-	-	-	
Trailers				1000	375	125	125	
Tractive Effort				1075	374	152	195	
Average Load - Loaded Cars (60%)				9.6	3.6	1.2	1.2	
Loaded Containers (60%)				48.0	18.0	6.0	6.0	
Net Tonnage *				432.0	162.0	54.0	54.0	
Variable Line Cost - Per Train Mile -								
Power Maintenance				8.87	7.40	7.40	10.37	
Power Transportation				14.90	8.70	4.50	5.50	
Wages				13.33	13.33	13.33	13.33	
Total				37.10	29.40	25.23	29.20	
Total Line Cost - Per Loaded Car Mile -								
Variable #				3.82	8.17	21.02	24.30	
Fixed ∅				10.92	10.92	10.92	10.92	
Total				14.74	19.09	31.94	35.62	
Per Train Mile $				141.55	68.71	38.33	42.44	
Per Net Ton Mile ■				3.277	4.242	7.099	7.880	

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* Loaded Containers @ 9 tons each.
# Variable Train Mile Cost divided by number of Loaded Cars.
∅ Average Fixed Line Cost of Rail Branch Line Way Trains.
$ Product of Car Mile Cost and number of Loaded Cars.
■ Quotient of Train Mile Cost and Average Load of Net Tonnage.

Analysis 81.6 Fixed and Variable Costs Indicated by Submissions for Light Diesel - Electric Locomotives and Light Diesel Mechanical Locomotives

	ELECTRIC LOCOMOTIVES			MECHANICAL LOCOMOTIVES		
	BALDWIN LOCO-MOTIVE WORKS	INGERSOLL RAND COMPANY	INGERSOLL RAND COMPANY	AUTOMATIC GEAR CORPO-RATION	AUTOMATIC GEAR CORPO-RATION	CLARK EQUIPMENT COMPANY HYDRAULIC
Capacity	Based on Maximum Speed of 50 miles per hour on level, tangent track.					
Total Revenue Cars	5	4	6	3	5	15
Gross Tonnage - Total	537.5	440	625	322.5	517.5	1389.5
Power Car	100	90	100	60	80	77
Trailers	437.5	350	525	262.5	437.5	1312.5
Containers - Total	25	20	30	15	25	75
Power Car	-	-	-	-	-	-
Trailers	25	20	30	15	25	75
Net Tonnage - Total	312.5	250	375	187.5	312.5	937.5
Power Car	-	-	-	-	-	-
Trailers	312.5	250	375	187.5	312.5	937.5
Tractive Effort	338	288	418	198	345	975
Average Load - Loaded Cars (60%)	3.0	2.4	3.6	1.8	3.0	9.0
Loaded Containers (60%)	15.0	12.0	18.0	9.0	15.0	45.0
Net Tonnage *	135	108	162	81	135	405
Variable Line Cost - Per Train Mile -						
Power Maintenance	9.71	7.36	9.37	3.50	5.33	15.70
Power Transportation	3.78	5.72	6.83	1.16	1.19	7.72
Wages	13.33	13.33	13.33	13.33	13.33	13.33
Total	26.82	26.41	29.53	18.00	19.85	36.75
Total Line Cost - Per Loaded Car Mile -						
Variable #	8.96	11.25	8.23	10.00	6.62	4.08
Fixed ø	10.92	10.92	10.92	10.92	10.92	10.92
Total	19.88	22.17	19.15	20.92	17.54	15.00
Per Train Mile $	59.64	53.35	68.94	37.66	52.51	135.00
Per Net Ton Mile ■	4.430	4.940	4.256	4.649	3.889	3.333
Capacity	Based on Maximum Speed of 60 miles per hour on level, tangent track.					
Total Revenue Cars		2	3	1	3	10
Gross Tonnage - Total	Speed	265.0	362.5	147.5	342.5	952.0
Power Car		90.0	100.0	60.0	80.0	77.0
Trailers	too	175.0	262.5	87.5	262.5	875.0
Containers - Total		10	15	5	15	50
Power Car	High	-	-	-	-	-
Trailers		10	15	5	15	50
Net Tonnage - Total		125	187.5	62.5	187.5	625
Power Car		-	-	-	-	-
Trailers		125	187.5	62.5	187.5	-
Tractive Effort		160	260	117	192	651
Average Load - Loaded Cars (60%)		1.2	1.8	0.6	1.8	6.0
Loaded Containers (60%)		6.0	9.0	3.0	9.0	30.0
Net Tonnage *		54.0	81.0	27.0	81.0	270.0
Variable Line Cost - Per Train Mile -						
Power Maintenance		7.36	9.37	3.50	5.33	15.70
Power Transportation		5.72	6.83	1.17	1.19	7.72
Wages		13.33	13.33	13.33	13.33	13.33
Total		26.41	29.53	18.00	19.85	36.75
Total Line Cost - Per Loaded Car Mile -						
Variable #		22.01	16.41	30.00	11.03	6.12
Fixed ø		10.92	10.92	10.92	10.92	10.92
Total		32.93	27.33	40.92	21.95	17.04
Per Train Mile $		39.51	49.19	24.55	39.51	102.21
Per Net Ton Mile ■		7.317	6.072	9.093	4.877	3.785

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* Loaded Containers @ 9 tons each.

# Variable Train Mile Cost divided by number of Loaded Cars.

ø Average Fixed Line Cost of Rail Branch Line Way Trains.

$ Product of Car Mile Cost and number of Loaded Cars.

■ Quotient of Train Mile Cost and Average Load of Net Tonnage.

Analysis 83.1 Containers Built for Transportation via Rail, Highway or Water

NAME	TYPE	NUMBER OWNED	OUTSIDE DIMENSIONS LENGTH WIDTH HEIGHT	CAPACITY POUNDS	CAPACITY CUBIC FEET	LIGHT WEIGHT POUND
CONTAINERS DESIGNED TO CARRY ORDINARY FREIGHT, FOR TRANSPORTATION ON FLAT OR GONDOLA CARS						
Acme Fast Freight, Inc. (W.P.Kellett)	Roll	4	21' 1½"x 7' 9" x 8' 5-3/4"	25000	1,050	5,800
Motor Terminals Co. (B.F. Fitch)	Crane Lift	77	20' 0" x 8' 0" x 8' 0"	60000	1,000	6,000
Cincinnati Motor Terminals Company	Crane Lift	250	17' 6" x 8' 0" x 8' 0"	20000	950	-
Security Storage Co.	Crane Lift	54	14' 9" x 7' 6" x 8' 2"	13000	800	4,000
Mt. Vernon Car Manufacturing Co.	Roll ø	4	15' 11½" x 7' 11"x 7' 11"	-	823	2,935
Pennsylvania Railroad	Crane Lift	50	19' 0" x 7' 0" x 7' 4"	30000	790	4,000
Pennsylvania Railroad	Crane Lift	1	19' 0" x 7' 0" x 7' 4"	30000	790	2,600
Security Storage Co.	Crane Lift *	10	14' 9" x 7' 6" x 8' 2"	13000	700	1,900
Security Storage Co.	Crane Lift	12	11' 5" x 7' 6" x 8' 2"	10000	600	3,720
Milwaukee Electric Ry. & Light Co.	Slide	18	14' 2" x 6' 8" x 5' 11"	12500	557	3,200
Milwaukee Electric Ry. & Light Co.	Slide **	-	14' 2" x 6' 8" x 5' 8"	-	-	-
Railway Motor Trucking, Inc.	Roll & Slide	-	9' 0" x 9' 0" x 7' 8"	28000	548	4,800
Mt. Vernon Car Co.	Roll ø	-	9' 6" x 7' 9" x 7' 11"	10000	493	2,280
Pennsylvania Railroad	Crane Lift	1	9' 0" x 7' 0" x 8' 0"	12000	444	2,640
Pennsylvania Railroad	Crane Lift	1	9' 0" x 7' 0" x 8' 0"	12000	440	2,800
Pennsylvania Railroad	Crane Lift	3,150	9' 0" x 7' 0" x 8' 0"	12000	440	2,900
Pennsylvania Railroad	Crane Lift	995	9' 0" x 7' 0" x 8' 0"	12000	440	3,000
Pennsylvania Railroad	Crane Lift	5	9' 0" x 7' 0" x 8' 0"	12000	440	3,050
Pennsylvania Railroad	Crane Lift	10	9' 0" x 7' 0" x 8' 0"	12000	440	3,100
Youngstown Steel Door Co.	Crane Lift	-	9' 0" x 7' 0" x 8' 0"	-	440	3,050
Pennsylvania Railroad	Crane Lift	100	9' 0" x 7' 0" x 8' 0"	12000	430	2,400
New York Central Railroad	Crane Lift	753	9' 3½"x 7' 0½"x 8' 1-3/4"	10000	426	3,000
The L.C.L. Corporation	Crane Lift	836	9' 3½"x 7' 0½"x 8' 1-3/4"	10000	426	3,000
The L.C.L. Corporation	Lift Truck /	2,326	9' 3-3/8"x 7' 2½"x 9' 4"	10000	417	2,967
Mt. Vernon Car Manufacturing Co.	Roll ø	-	7' 9" x 6' 0" x 7' 11"	10000	304	1,760
CONTAINERS DESIGNED TO CARRY BULK FREIGHT, FOR TRANSPORTATION ON FLAT OR GONDOLA CARS						
Milwaukee Electric Ry. & Light Co.	Slide	-	15' 9" x 7' 0" x 3' 11"	-	-	-
Pennsylvania Railroad	Crane Lift ¢	99	7' 0" x 4' 3" x 8' 9"	16000	237	3,150
Pennsylvania Railroad	Crane Lift ¢	1	7' 0" x 4' 3" x 8' 9"	16000	230	3,010
Pennsylvania Railroad	Crane Lift ¢	1	7' 0" x 4' 3" x 8' 9"	16000	230	3,455
Pennsylvania Railroad	Crane Lift ¢	1	7' 0" x 4' 3" x 8' 9"	16000	230	3,600
Pennsylvania Railroad	Crane Lift ¢	6	7' 0" x 4' 3" x 8' 0"	16000	220	3,000
Youngstown Steel Door Co.	Crane Lift ɸ	-	7' 0" x 4' 3" x 7' 11½"	16000	220	2,015
New York Central Railroad	Crane Lift ɸ	6,024	7' 2½"x 4' 8-3/4"x8'2-1/8"	11000	209	2,300
New York Central Railroad	Crane Lift ¢	2,556	7' 2½"x 4' 8-3/4"x8'2-1/8"	11000	209	3,000
Youngstown Steel Door Co.	Crane Lift ɸ	-			134	2,470
Pennsylvania Railroad	Crane Lift ɸ	204	7' 0" x 4' 3" x 6' 3½"	16000	128	2,800
Youngstown Steel Door Co.	Crane Lift ɸ	-	4' 3" x 3' 6" x 7' 11½"	8000	110	1,145
Pennsylvania Railroad	Crane Lift ɸ	12	7' 6" x 4' 3" x 3' 6"	8000	-	-
Pennsylvania Railroad	Crane Lift ɸ	6	7' 6" x 4' 3" x 7' 0"	16000	-	-
CONTAINERS DESIGNED TO CARRY REFRIGERATED FREIGHT, FOR TRANSPORTATION ON FLAT OR GONDOLA CARS						
R. V. Grayson	Lift Truck / ø	-	9' 5" x 7' 2" x 9'10-3/4"	-	288	3,800
The L.C.L. Corporation	Lift Truck / ø	4	9' 3-3/8"x 7' 2½"x 9' 4"	-	260	3,200
CONTAINERS DESIGNED TO CARRY ORDINARY FREIGHT, FOR TRANSPORTATION IN BOX CARS						
C.G. Stetson (Fidelity Storage & Transfer Co.)	Lift Truck	-	7' 6" x 4' 0" x 6' 6"	3250	180	1,700
Church Freight Service, Inc.	Roll	50	6' 0" x 2' 8" x 6' 6"	2500	90	400
Boston & Maine Railroad	Roll	-	5' 6" x 3' 6" x 4' 0"	3000	77	554
Boston & Maine Railroad	Roll	-	4' 6" x 3' 4" x 3' 8"	2100	55	314
CONTAINERS DESIGNED TO CARRY REFRIGERATED FREIGHT, FOR TRANSPORTATION IN BOX CARS						
Church Freight Service, Inc.	Roll	50	6' 0" x 2' 8" x 6' 6"	2500	80	700

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* Aluminum construction.

/ Also arranged for crane lift.

ø Experimental.

¢ For brick, etc.

ɸ For lime, etc.

** Open top.

Analysis 84.1 Rail Freight Car Characteristics - 1933

TYPE OF CAR	FREIGHT CARS NUMBER	FREIGHT CARS % OF TOTAL	AVERAGE TARE WEIGHT TONS	AVERAGE LOAD LIMIT TONS	AVERAGE CAPACITY CUBIC FEET
ALL CARS	2,417,797	100.0	21.5	55.6	2,247
BOX	1,061,806	43.9	21.3	50.5	2,878
House	851,009	35.2	20.5	50.6	2,755
Automobile	135,155	5.6	25.5	53.4	3,598
Furniture	32,731	1.3	25.5	51.7	3,716
Ventilated	42,911	1.8	21.5	38.0	2,447
REFRIGERATOR	151,139	6.3	27.5	38.2	1,948
POULTRY AND STOCK	85,981	3.6	19.5	45.5	2,485
Poultry	3,037	0.2	21.5	49.4	3,309
Stock	82,944	3.4	19.5	45.5	2,457
OPEN TOP	885,777	36.6	21.2	66.3	1,717
Gondola	427,947	17.7	21.5	64.5	1,531
Hopper	457,830	18.9	21.0	68.0	1,892
TANK	127,865	5.3	23.5	49.7	1,100
FLAT	105,229	4.3	17.0	56.5	1,980

Included in above enumeration are private cars as follows:
Tank, 117,791; Poultry, 2,807; Refrigerator, 131,072.

Source: Section of Car Pooling Study and the Official Railway Equipment Register.

Analysis 85.1 Distribution of Rail Traffic Among Types of Equipment - December 13, 1933

COMMODITY GROUP	PERCENTAGE OF COMMODITY TON MILES CARRIED BOX	REFRIGER- ATOR	VENTILATED BOX	POULTRY AND STOCK	GONDOLA	HOPPER	TANK	FLAT CAR
ALL COMMODITIES	34%	14%	*%	2%	18%	21%	9%	1%
I ROUGH MATERIAL	20%	-	-	-	59%	16%	-	5%
Sand, Stone and Gravel	20	-	-	-	59	16	-	5
II RAW MATERIAL	23%	14%	*%	4%	23%	34%	*%	2%
Bulk Grain and Beets	95	*	*	-	4	1	-	-
Perishables	2	98	1	-	-	-	-	-
Live Animals	14	-	-	86	-	-	-	-
Coal and Coke	5	-	-	-	38	57	-	-
Ores	58	-	-	-	17	25	-	-
Sulphur and Sulphuric Acid	70	-	-	-	15	15	-	-
Forests Products	79	-	1	*	5	*	*	14
III SEMIPROCESSED MATERIAL	100%	-	*%	-	-	-	-	-
Cotton, Hay and Tobacco	100	-	*	-	-	-	-	-
Paper and Products	100	-	-	-	-	-	-	-
IV NECESSARIES	60%	33%	*%	-	1%	-	6%	-
Cereals	99	1	*	-	-	-	-	-
Miscellaneous Farm Products	76	17	2	-	3	-	3	-
Edible Animal Products	2	96	-	-	-	-	3	-
Oils - Vegetable and Animal	48	8	1	-	-	-	42	-
Manufactured Food	65	27	*	-	1	-	7	-
Textiles and Leather	100	-	1	-	-	-	-	-
VI AUXILIARIES	35%	2%	*%	*%	2%	1%	59%	1%
Petroleum and Products	4	-	-	-	1	-	95	*
Building Materials	93	-	-	-	5	2	-	*
Chemicals	66	-	-	-	-	-	34	-
Miscellaneous	69	8	1	2	4	2	12	2
VII ACCESSORIES	61%	-	-	-	34%	1%	-	4%
Iron and Steel	45	-	-	-	50	2	-	3
Other Metals	100	-	-	-	*	-	-	-
Appliances	87	-	-	-	3	-	-	10
Glass and Tile	99	-	-	-	-	-	-	1

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* Less than ½%

SECTION 89. MOBILITY

Analysis 89.1 Rail Car Service by Type of Equipment - December 13, 1933

	ALL CARS		BOX			POULTRY AND				FLAT
	C.L.	L.C.L.	C.L.	L.C.L.	REFRIG-ERATOR	STOCK	GONDOLA	HOPPER	TANK	CAR
CARS OWNED AND PERCENTAGES BY TYPES										
Total	2,417,795		43.92%		6.25%	3.56%	17.70%*	18.94%#	5.29%	4.34%
Carrier	2,166,127		49.02		.92	3.84	19.76	21.14	.47	4.85
Private	251.670		-		52.08	1.12	-	-	46.80	-
PERCENTAGE OF TOTAL CAR MILES										
Car Load	100.00%		37.42%	-%	25.19%	5.32%	10.85%	11.39%	8.21%	1.62%
Less Car Load	-	100.00%	-	81.3%	16.89%		28%	-	-	1.70%
AVERAGE HAUL (MILES)	375.5	199.1	425.9	198.1	1,168.6	385.8	208.8	212.1	263.2	178.7
AVERAGE LOAD (TONS)	28.2	-	27.2	-	14.9	11.9	46.0	52.0	29.6	19.8
AVERAGE REVENUE										
Per Car	$ 91.28	-	$ 64.96	-	$ 169,59	$130.40	$81.92	$92.44	$118.09	$59.92
Per Ton	3.48	-	4.59	-	15.96	6.46	1.75	1.78	3.82	2.14
Per Car Mile	.276	-	.208	-	.182	.200	.385	.436	.430	.237
Per Ton Mile	.012	-	.011	-	.014	.017	.008	.008	.015	.012
Per Equated Ton Mile	.006	-	.006	-	.008	.009	.005	.005	.008	.007
AVERAGE CAR DAYS IN TRANSIT										
TOTAL	6.00	1.77	6.08	1.76	5.59	2.00	6.29	7.09	4.65	4.82
PATRON										
Total	2.85	.36	2.61	.37	1.82	.48	3.30	3.81	2.21	2.30
Origin	1.42	.25	1.20	.25	.64	.38	1.90	2.01	1.01	1.21
Destination	1.43	.11	1.41	.12	1.18	.10	1.40	1.80	1.20	1.09
CARRIER										
Total	3.15	1.41	3.47	1.39	3.77	1.52	2.99	3.28	2.44	2.52
Origin	.47	.46	.56	.46	.30	.15	.52	.53	.41	.63
Intermediate	1.11	.22	1.16	.22	1.19	.48	1.03	1.41	.87	.76
Destination	.62	.29	.73	.29	.39	.10	.76	.61	.45	.48
Road	.95	.44	1.02	.42	1.89	.79	.68	.73	.71	.65
COMPARATIVE DETENTION										
Patron	47%	20%	43%	21%	33%	31%	52%	54%	48%	48%
Carrier										
Total	53%	80%	57%	79%	67%	69%	48%	46%	52%	52%
Yard	37	55	40	55	33	30	37	36	37	39
Road	16	25	17	24	34	39	11	10	15	13
MILES PER CAR DAY										
Overall	63	112	66	105	166	193	34	30	59	52
Carrier										
Total	119	141	115	133	247	257	73	65	111	85
Road	395	447	390	441	493	487	314	291	388	389
CAR MILES										
Actual (Millions)	18.5	3.4	6.9	2.7	5.2	1.0	2.0	2.1	1.5	.3
Direct (Millions)	16.7	3.1	6.3	-	4.8	.9	1.8	1.9	1.3	.3
CIRCUITY	10.8%	7.0%	8.7%	-	9.0%	8.4%	11.2%	8.6%	14.6%	10.8%

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* Does not include Private Cars

Includes Private Gondola Cars

SECTION 90. UTILITY

Analysis 90.1 Rail Freight Car Performance - 1932

OPERATING DISTRICT	NET TON MILES	AVERAGE TON MILES PER LOADED CAR MILE		
		EQUATED TON MILES	CAR TON MILES	GROSS TON MILES
UNITED STATES	23	44	63	72
NEW ENGLAND	17	33	53	62
Connecticut	17	33	52	61
Maine	19	37	57	66
Massachusetts	17	33	53	62
New Hampshire	18	35	53	61
Rhode Island	16	31	53	61
Vermont	15	29	44	53
TRUNK LINE	26	50	65	74
Delaware	18	35	59	67
Maryland	26	50	65	75
New Jersey	29	56	68	78
New York	22	43	61	70
Pennsylvania	28	54	67	77
CENTRAL	24	46	65	74
Illinois	22	43	63	72
Indiana	22	43	63	72
Michigan	20	39	61	71
Ohio	27	52	67	77
POCAHONTAS	38	74	80	90
Virginia	36	70	78	87
West Virginia	40	77	82	92
SOUTHEASTERN	23	44	61	71
Alabama	21	41	58	69
Florida	23	44	79	97
Georgia	18	35	58	68
Kentucky	32	62	72	80
Mississippi	19	37	56	64
North Carolina	17	33	52	62
South Carolina	20	39	56	67
Tennessee	22	43	59	69
WESTERN TRUNK LINE	19	37	60	69
Iowa	19	37	61	71
Kansas	20	39	61	70
Minnesota	22	43	61	71
Missouri	19	37	60	69
Nebraska	18	35	59	69
North Dakota	20	39	57	67
South Dakota	20	39	60	72
Wisconsin	19	37	58	67
SOUTHWESTERN	20	39	61	71
Arkansas	20	39	59	65
Louisiana	23	44	62	70
New Mexico	18	35	63	74
Oklahoma	21	41	64	75
Texas	19	37	61	71
PACIFIC NORTHWEST	20	39	60	70
Idaho	20	39	60	71
Montana	20	39	60	70
Oregon	20	39	57	69
Washington	22	43	62	75
Wyoming	17	33	59	68
PACIFIC SOUTHWEST	17	33	55	65
Arizona	17	33	64	74
California	19	37	60	72
Colorado	11	.21	34	41
Nevada	19	37	61	68
Utah	18	35	57	69

Analysis 90.2 Utilization of Box Car Capacity* - Non-manufactures - 1933

ICC COMMODITY NO.	COMMODITIES (ICC CLASSIFICATION)	PER CENT OF TOTAL		DENSITY POUND PER CUBIC FOOT	STOWAGE FACTOR CUBIC FEET PER TON	FREIGHT CAR				CONTAINER				
		CARS	TONS			VOLUME CAR CAPACITY ƒ (TONS)	AVERAGE LOAD (TONS)	UTILIZATION WEIGHT ϕ	UTILIZATION VOLUME ɓ	TYPE#	AVERAGE LOAD (TONS) **	NUMBER PER CAR ##	UTILIZATION WEIGHT //	UTILIZATION VOLUME ϕϕ
	ORDINARY BOX CAR													
	(2,755 cu.ft.-50.6 Tons)	18.07	14.07	36.6	54.7	50.4	27.6	54%	55%	-	9.2	2.39	66%	100%
10	Wheat	1.34	2.41	48	41.7	66.2	44.2	87	67	C5	12.0	3.68	96	100
20	Corn	1.55	1.79	45	44.5	62.0	41.1	81	67	C5	11.2	3.67	90	100
30	Oats	0.54	0.49	26	77.0	35.8	32.1	64	89	C5	6.5	4.94	52	100
40	Barley and Rye	0.29	0.33	37	54.1	51.0	40.2	80	79	C5	9.2	4.37	74	100
41	Rice	0.12	0.09	40	50.0	55.1	28.4	56	53	C5	10.0	5.51	80	100
42	Grain, NOS	0.01	0.01	34	58.9	46.8	27.0	53	59	C5	8.5	3.18	68	100
50	Flour, Wheat	1.77	1.21	42	47.7	57.9	24.3	48%	43%	C5	10.5	2.31	84%	100%
51	Meal, Corn	0.07	0.04	36	55.6	49.6	20.5	41	42	C5	9.0	2.28	72	100
52	Flour and Meal,Edible,NOS	0.10	0.06	36	55.6	49.6	22.1	44	45	C5	9.0	4.45	72	100
60	Cereal Foods	0.21	0.11	17	117.7	23.4	18.2	36	77	C5	4.2	4.34	34	100
61	Mill Products, NOS	1.40	0.88	30	66.7	41.3	22.4	44	53	C5	7.5	2.99	60	100
70	Hay and Alfalfa	0.48	0.18	14	142.8	19.3	12.9	26%	67%	C12	8.4	1.54	22%	100%
71	Straw	0.10	0.04	11	181.8	15.0	13.7	27	91	C12	6.6	2.08	18	100
80	Tobacco, Leaf	0.33	0.10	24	83.4	33.1	10.8	21	33	C5	6.0	1.80	48	100
90	Cotton in Bales	1.13	0.45	20	100.0	27.6	14.0	28	50	C5	5.0	2.80	40	100
91	Cotton Linters, etc.	0.09	0.05	15	133.4	20.7	18.6	37	90	C5	3.7	5.03	30	100
100	Cottonseed	0.24	0.18	30	66.7	41.3	26.6	53	63	C5	7.5	3.55	60	100
101	Cottonseed Meal and Cake	0.27	0.19	40	50.0	55.1	24.6	49	45	C5	10.0	2.46	80	100
130	Potatoes (except sweet)	1.01	0.51	38	52.7	52.3	17.9	35%	34%	C5	9.5	1.89	76%	100%
140	Cabbage	0.13	0.05	26	77.0	35.8	12.8	25	35	C5	6.5	1.92	52	100
141	Onions	0.15	0.06	28	71.5	38.6	13.3	26	36	C5	7.0	1.90	56	100
150	Beans and Peas, Dried	0.12	0.09	42	47.7	57.9	26.4	52	45	C5	10.5	2.52	84	100
151	Fruits, Dried	0.09	0.07	39	51.3	53.7	27.1	54	51	C5	9.7	2.79	78	100
152	Vegetables, Dry, NOS	0.07	0.02	27	74.1	37.2	13.0	26	35	C5	6.7	1.94	54	100
160	Vegetable Oil and Cake	0.05	0.04	40	50.0	55.1	24.2	48	45	C5	10.0	2.42	80	100
161	Peanuts	0.08	0.03	17	117.7	23.4	15.7	31	67	C5	4.2	3.74	34	100
162	Flaxseed	0.03	0.03	39	51.3	53.7	36.9	73	69	C5	9.7	3.81	78	100
163	Sugar Beets	0.75	0.97	44	45.5	60.6	45.9	91	75	C5	11.0	4.17	88	100
164	Products of Agriculture,NOS	0.63	0.45	28	71.5	38.6	25.0	49	64	C5	7.0	3.57	56	100
260	Wool	0.13	0.05	15	133.4	20.7	13.2	26%	64%	C5	3.7	3.57	30%	100%
270	Hides, Green	0.13	0.09	41	48.8	56.5	23.1	46	41	C5	10.2	2.26	82	100
271	Leather	0.00	0.02	25	80.0	34.4	18.0	36	52	C5	6.2	2.90	50	100
280	Fish or Sea-animal Oil	0.00	0.01	37	54.1	51.0	28.3	56	55	C5	9.2	3.08	74	100
282	Animal Products, NOS	0.24	0.14	32	62.5	44.1	20.9	41	47	C5	8.0	2.62	64	100
380	Salt	0.48	0.40	50	40.0	68.9	29.5	58%	42%	C5	12.5	2.36	100%	100%
430	Lumber, Shingles, Lath	2.39	1.80	25	80.0	34.4	26.8	53	78	(a)	12.1	2.22	42	100
431	Box, Crate, Cooperage	0.44	0.29	24	83.4	33.1	23.4	47	71	C5	6.0	3.90	48	100
432	Veneer and Builtup Wood	0.03	0.02	25	80.0	34.4	23.7	47	69	C12	15.0	1.58	40	100
440	Rosin	0.06	0.04	40	50.0	55.1	21.9	43	40	C5	10.0	2.19	80	100
441	Turpentine	0.01	0.01	37	54.1	51.0	23.8	47	46	C5	9.2	2.59	74	100
442	Crude Rubber	0.08	0.06	33	60.6	45.5	33.4	66	73	C5	8.2	4.08	66	100
443	Forest Products, NOS	0.33	0.21	20	100.0	27.6	21.8	43	80	(b)	7.3	2.98	35	100
	% Utilization, weight or Volume							66%					100%	

(a) 1/3 in C5, 2/3 in C12. (b) 2/3 in C5, 1/3 in C12.

* Based on average weight capacity and average volume capacity of cars, Analysis 84.1; per cent of total cars and total tons terminated, year 1933, ICC Statistics.

# C5 is 500 cubic foot, 12.5 ton capacity container; C12 is 1,200 cubic foot, ton capacity (12.5 ton capacity on highway) containers.

ƒ Cubic feet (each type of car) divided by stowage factor.

ϕ Average load divided by average weight capacity of car.

ɓ Average load divided by average volume capacity of car.

** Density of each commodity multiplied by volume capacity of container (500 or 1,200 cu.ft.) with maximum allowable load of 12.5 tons except for C12 container which can carry 37.5 tons on railroads.

## Average load per car divided by average load per container.

// Average load divided by 12.5 tons for C5 container and by 37.5 tons for C12 container.

ϕϕ Average load multiplied by stowage factor and the product divided by volume capacity of container (500 or 1,200 cu. ft.)

Analysis 90.3 Utilization of Box Car Capacity* - Manufactures - 1933

ICC COMMODITY NO.	COMMODITIES (ICC CLASSIFICATION)	PER CENT OF TOTAL		DENSITY POUND PER CUBIC FOOT	STOWAGE FACTOR CUBIC FEET PER TON	FREIGHT CAR				CONTAINER				
		CARS	TONS			VOLUME CAR CAPACITY ƒ (TONS)	AVERAGE LOAD (TONS)	UTILIZATION WEIGHT ϕ	UTILIZATION VOLUME ɓ	TYPE#	AVERAGE LOAD (TONS) **	NUMBER PER CAR ##	UTILIZATION WEIGHT //	UTILIZATION VOLUME ϕϕ
	ORDINARY BOX CAR													
	(2,755 cu.ft.-50.6 Tons)	16.42	11.02	35.5	56.4	48.9	23.8	47%	49%	-	6.4	3.73	57%	96%
452	Lubricating Oils	0.58	0.36	38	52.7	52.3	22.2	44	42	C5	9.5	2.34	77	100
453	Petroleum Products, NOS	0.04	0.03	38	52.7	52.3	23.9	47	45	C5	9.5	2.52	77	100
462	Vebetable Oils, NOS	0.07	0.06	38	52.7	52.3	29.6	58	55	Tank	-	-	-	-
470	Sugar (Beets or Cane)	0.59	0.52	43	46.5	59.2	31.7	63	54	C5	10.7	2.97	86	100
471	Sirups and Molasses	0.10	0.09	50	40.0	68.9	31.4	62	46	C5	12.5	2.51	100	100
512	Nails and Wire	0.27	0.22	67	29.9	92.1	25.5	50	28	C5	12.5	2.04	100	75
521	Copper, Brass and Bronze, Bar, Sheet and Pipe	0.03	0.02	180	11.1	248.2	28.6	57	12	C12	28.6	1.00	76	27
540	Cement, Portland, etc.	1.31	1.39	67	29.9	92.1	37.7	74	41	C5	12.5	3.02	100	75
551	Brick, Building Tile	0.36	0.37	86	25.0	110.2	37.0	73	34	C5	12.5	2.96	100	63
552	Artificial Stone, NOS	0.02	0.01	110	18.2	151.5	29.6	58	19	C5	12.5	2.37	100	45
560	Lime, Common	0.25	0.17	50	40.0	68.9	24.2	48	36	C5	12.5	1.94	100	100
561	Plaster	0.11	0.08	50	40.0	68.9	24.9	49	36	C5	12.5	1.99	100	100
570	Sewer Pipe and Drain Tile	0.16	0.08	28	71.5	38.6	16.9	33	43	C5	7.0	2.41	56	100
581	Vehicles, Horse-drawn	0.01	0.00	13	153.8	17.9	12.6	25	69	C12	7.8	1.62	21	100
592	Autos and Trucks, K.D.	0.50	0.26	31	64.6	42.7	18.5	37	42	C12	18.6	1.00	50	100
593	Auto and Truck Tires	0.10	0.04	12	166.8	16.5	14.4	28	87	C12	7.2	2.00	19	100
640	Fertilizers, NOS	0.97	0.76	50	40.0	68.9	27.8	55	40	C5	12.5	2.22	100	100
650	Newsprint Paper	0.22	0.16	33	60.6	45.5	25.6	51	57	(d)	14.0	1.83	56	100
651	Printing Papers, NOS	0.29	0.19	43	46.5	59.2	22.9	45	40	C5	10.7	2.14	86	100
660	Alcohol	0.07	0.04	35	57.2	-	21.1	42	43	C5	8.7	2.43	67	100
662	Explosives, NOS	0.04	0.02	50	40.0	68.9	16.8	33	24	C5	12.5	1.34	100	100
670	Cotton Cloth and Fabric	0.18	0.05	33	60.6	45.5	10.3	20	21	C5	8.2	1.25	66	100
671	Bagging and Bags	0.06	0.03	33	60.6	45.5	17.7	35	39	C5	8.2	2.16	66	100
680	Canned Food Products	0.74	0.48	41	48.8	56.5	23.2	46	41	C5	10.2	2.28	82	100
690	Tobacco, Manufactured	0.05	0.03	18	111.0	24.7	18.3	36	74	C5	4.5	4.07	36	100
691	Paint and Varnish	0.05	0.03	54	37.1	74.4	21.5	42	30	C5	12.5	1.72	100	93
694	Paper Bags and Wrappers	0.27	0.17	29	69.0	39.9	22.5	44	55	C5	7.2	3.12	19	100
695	Paperboard, Pulpboard	0.46	0.27	25	80.0	34.4	21.2	42	62	C12	15.1	1.40	40	100
696	Building Paper and Prepared Roofing	0.26	0.16	42	47.7	57.9	22.2	44	38	C5	10.5	2.11	84	100
697	Building woodwork	0.04	0.02	21	95.3	28.9	18.9	37	67	C12	12.6	1.50	34	100
698	Soap and Washing Powder	0.22	0.13	45	44.5	62.0	21.4	42	35	C5	11.2	1.91	90	100
699	Glass, Flat	0.05	0.04	75	26.7	103.3	31.9	63	31	C5	12.5	2.55	100	67
700	Glass, Bottles, Jars	0.44	0.22	21	95.3	28.9	17.6	35	61	C5	5.2	3.38	42	100
701	Manufactures and Miscellaneous, NOS	7.51	4.52	16	125.0	22.0	21.4	42	97	C5	4.0	5.35	32	100
	All Ordinary Box Cars	34.49	25.09	36.1	55.4	49.7	25.8	51	52	-	7.7	3.34	62	98
	% Utilization, Weight or Volume							70%					100%	
	AUTO BOX													
	(3,598 cu.ft.-53.4 Tons)	0.94	0.16	4.1	48.8	7.4	6.1	11%	82%	ab	-	-	-	-
590	Automobiles (Passenger)	0.88	0.15	4	50.0	7.2	5.9	11	82	ab	-	-	-	-
591	Auto-trucks	0.06	0.01	5	40.0	9.0	8.1	15	90	ab	-	-	-	-
	% Utilization, Weight or Volume							83%					-	
	FURNITURE BOX													
	(3,716 cu.ft.-51.7 Tons)	0.24	0.06	6.6	30.3	12.3	8.4	16%	68%	-	3.9	2.18	11%	100%
610	Furniture, Metal	0.04	0.01	9	22.2	16.7	10.7	20	64	C12	5.4	1.98	14	100
611	Furniture, Other	0.20	0.05	6	33.4	11.1	8.0	15	72	C12	3.6	2.22	10	100
	% Utilization, Weight or Volume							71%					100%	
	ALL BOX CARS													
	(2,787 cu.ft.-50.7)	35.67	25.31	35.8	55.9	49.9	25.2	50%	50%	-	7.7	3.33	62%	98%
	% Utilization, Weight or Volume							70%					100%	

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* For General Notes see Analysis 90.2 (d) 1/2 in C5. 1/2 in C12. ab - Automobile box car, not in container.

Analysis 90.4 Utilization of Capacity of Refrigerator, Stock, Poultry, etc. Cars* - 1933

ICC COMMODITY NO.	COMMODITIES (ICC CLASSIFICATION)	PER CENT OF TOTAL CARS	PER CENT OF TOTAL TONS	DENSITY POUND PER CUBIC FOOT	STOWAGE FACTOR CUBIC FEET PER TON	FREIGHT CAR VOLUME CAR CAPACITY ǂ (TONS)	FREIGHT CAR AVERAGE LOAD (TONS)	FREIGHT CAR UTILIZATION WEIGHT ¢	FREIGHT CAR UTILIZATION VOLUME ¢	CONTAINER TYPE#	CONTAINER AVERAGE LOAD (TONS) **	CONTAINER NUMBER PER CAR ##	CONTAINER UTILIZATION WEIGHT ++	CONTAINER UTILIZATION VOLUME ¢¢
	REFRIGERATOR													
	(1,948 cu.ft. - 38.2 Tons)	5.03	1.89	26.8	74.7	26.1	13.4	35%	51%	-	5.0	2.69	42%	100%
110	Oranges and Grapefruits	0.49	0.24	32	62.5	31.2	17.5	46	56	C4	6.4	2.74	51	100
111	Citrus Fruits, NOS	0.06	0.03	32	62.5	31.2	15.2	40	50	C4	6.4	2.38	51	100
120	Apples, Fresh	0.35	0.16	24	83.4	23.4	16.5	43	71	C4	4.8	3.44	36	100
121	Bananas	0.27	0.08	17	117.7	16.5	10.7	28	65	C4	3.4	3.18	27	100
122	Berries, Fresh	0.03	0.01	20	100.0	19.5	9.4	25	48	C4	4.0	2.35	32	100
123	Melons, NOS	0.09	0.03	28	71.5	27.3	11.4	30	43	C4	5.6	2.03	45	100
124	Grapes, Fresh	0.15	0.06	28	71.5	27.3	14.8	39	54	C4	5.6	2.64	45	100
125	Peaches, Fresh	0.13	0.05	32	62.5	31.2	13.2	35	42	C4	6.4	2.06	51	100
126	Watermelons	0.12	0.05	20	100.0	19.5	13.3	35	68	C4	4.0	3.32	32	100
127	Fruits, Domestic, NOS	0.13	0.06	30	66.7	29.2	15.4	40	53	C4	6.0	2.57	48	100
128	Fruits, Tropical, NOS	0.01	0.00	40	50.0	39.0	12.0	31	30	C4	8.0	1.50	64	100
142	Tomatoes	0.11	0.04	29	69.0	28.3	11.5	30	41	C4	5.8	1.98	56	100
143	Vegetables, Fresh	0.72	0.22	24	83.4	23.4	11.3	30	48	C4	4.8	2.35	36	100
210	Fresh Meats, NOS	1.24	0.43	22	91.0	21.4	12.3	32	57	C4	4.4	2.80	35	100
220	Meats, Cured, etc.	0.20	0.08	37	54.1	36.0	15.0	39	41	C4	7.4	2.03	59	100
221	Butterine, Margarine	0.01	0.00	40	50.0	39.0	13.3	35	35	C4	8.0	1.66	64	100
222	Packinghouse Products, Edible, NOS	0.32	0.14	29	69.0	28.3	16.3	43	59	C4	5.8	2.81	56	100
231	Poultry, Dressed	0.13	0.04	26	77.0	25.3	11.9	31	46	C4	5.2	2.29	42	100
240	Eggs	0.19	0.06	23	87.0	22.4	11.4	30	52	C4	4.6	4.47	37	100
250	Butter	0.24	0.08	40	50.0	39.0	12.4	32	33	C4	8.0	1.55	64	100
251	Cheese	0.06	0.03	35	57.2	34.1	14.3	37	43	C4	7.0	2.04	56	100
	% Utilization, Weight or Volume							54%					100%	
	STOCK													
	(2,458 cu.ft. - 45.5 Tons)	4.37	1.37	9.5	210.5	11.7	11.1	24%	95%	-	5.3	2.11	14%	100%
170	Horses, Mules, etc.	0.12	0.04	10	200.0	12.2	11.8	26	97	C12	6.0	1.97	16	100
180	Cattle and Calves, S.D.	1.98	0.65	9	222.0	11.1	11.6	25	100	C12	5.0	2.32	13	100
181	Calves, Double-deck	0.02	0.01	13	153.8	15.9	12.5	27	79	C12	7.9	1.58	21	100
190	Sheep and Goats, S.D.	0.12	0.02	5	400.0	6.1	6.7	15	100	C12	3.0	2.23	8	100
191	Sheep and Goats, D.D.	0.42	0.12	9	222.0	11.1	10.6	23	95	C12	5.0	2.12	13	100
200	Hogs, Single-deck	0.73	0.17	7	286.0	8.6	8.2	18	95	C12	4.2	1.95	11	100
201	Hogs, Double-deck	0.98	0.36	12	166.8	14.8	13.0	29	88	C12	7.2	1.80	19	100
281	Animals, Live, NOS	0.00	0.00	9	222.0	11.1	11.0	24	100	C12	5.0	2.32	13	100
	% Utilization, Weight or Volume							96%					100%	
	POULTRY													
	(3,309 cu.ft. - 49.4 Tons)	0.05	0.01	7	286.0	11.6	9.7	20%	84%	-	4.2	2.31	11%	100%
230	Poultry, Live	0.05	0.01	7	286.0	11.6	9.7	20	84%	C12	4.2	2.31	11	100
	% Utilization, Weight or Volume							84%					100%	
	1/2 BOX AND 1/2 GONDOLA													
	(2,143 cu.ft. - 57.5 Tons)	4.00	3.55	121.5	16.5	129.9	31.4	55%	24%	-	23.0	1.41	79%	54%
402	Wood (Fuel)	0.25	0.22	32	62.5	34.3	30.2	53	88	C5	8.0	3.77	64	100
410	Ties, Railroad	0.19	0.17	35	57.2	37.5	31.4	55	83	flat	-	-	-	-
420	Pulpwood	0.63	0.61	32	62.5	34.3	33.9	59	100	C12	19.3	1.76	52	100
511	Iron and Steel Pipe	0.27	0.22	80	25.0	85.7	29.2	51	34	C12	29.2	1.00	78	61
513	Iron and Steel, Finished	2.06	1.97	180	11.1	193.0	33.9	59	18	C12	33.9	1.00	90	31
530	Machinery and Boilers	0.33	0.16	40	50.0	42.9	17.7	31	42	(g)	17.7	1.00	47	74
550	Brick, Common	0.13	0.13	120	16.6	129.0	36.3	63	28	C5	12.5	2.90	100	42
580	Agricultural Implements	0.07	0.03	33	60.6	35.4	15.6	27	44	(h)	14.0	1.11	56	100
582	Tractor and Parts	0.04	0.02	25	80.0	26.8	15.1	26	56	(d)	10.6	1.42	42	100
583	Railway Car Wheels, Axles and Trucks	0.03	0.02	165	12.1	177.0	28.5	50	16	(gon)	-	-	-	-
	% Utilization, Weight or Volume							66%					92%	
	3/4 REFRIGERATOR AND 1/4 BOX													
	(2,150 cu.ft. - 41.2 Tons)	0.54	0.32	47	42.6	50.5	21.4	52%	42%	-	9.7	2.21	77%	100%
620	Beverages	0.33	0.17	38	52.7	40.8	18.3	44	45	(j)	8.5	2.16	68	100
630	Ice	0.21	0.15	57	35.1	61.3	26.3	64	42	C4	11.4	2.30	91	100
	% Utilization, Weight or Volume							52%					100%	
	1/2 TANK AND 1/2 BOX													
	(1,927 cu.ft. - 50.2 Tons)	0.35	0.35	56	35.7	54.0	35.4	71%	66%	tank	-	-	-	-
370	Asphalt	0.35	0.35	56	35.8	53.8	35.4	71	66	tank	-	-	-	-
	% Utilization, Weight or Volume							71%						

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* For general notes see Analysis 90.2. (g) 2/3 on flat car, 1/3 in C12. (h) 1/2 on flat car. 1/4 in C5, 1-1/4 in C12. (i) 1/2 in C5, 1/2 in C12. (gon) - Gondola. (j) 1/2 in C4, 1/2 in C5. C4 is 400 cubic feet, 12.5 tons capacity insulated container.

Analysis 90.5 Utilization of Open Top, Tank and Flat Cars* - 1933

ICC COMMODITY NO.	COMMODITIES (ICC CLASSIFICATION)	PER CENT OF TOTAL CARS	PER CENT OF TOTAL TONS	DENSITY POUND PER CUBIC FOOT	STOWAGE FACTOR CUBIC FEET PER TON	FREIGHT CAR VOLUME CAR CAPACITY ǂ (TONS)	FREIGHT CAR AVERAGE LOAD (TONS)	FREIGHT CAR UTILIZATION WEIGHT ¢	FREIGHT CAR UTILIZATION VOLUME ¢	CONTAINER TYPE#	CONTAINER AVERAGE LOAD (TONS) **	CONTAINER NUMBER PER CAR ##	CONTAINER UTILIZATION WEIGHT ++	CONTAINER UTILIZATION VOLUME ¢¢
	OPEN TOP													
	(1,717 cu.ft. - 66.3 Tons)	39.51	58.00	69.1	29.0	59.3	52.2	79%	88%	-	12.5	4.13	100%	74%
290	Anthracite Coal	5.77	8.25	53	37.8	45.4	50.8	77	111x	e	12.5	4.06	100	95
300	Bituminous Coal	22.46	33.69	51	39.3	43.7	53.3	80	122x	f	12.5	4.26	100	98
310	Coke	1.43	1.34	28	71.5	24.0	33.4	50	139x	o.t.	-	-	-	-
320	Iron Ore	2.39	3.87	160	12.5	137.4	57.7	87	42	o.t.	-	-	-	-
330	Copper Ore	0.15	0.23	135	14.8	116.0	53.4	81	46	o.t	-	-	-	-
331	Lead Ore	0.06	0.08	160	12.5	137.4	53.0	80	39	o.t.	-	-	-	-
332	Zinc Ore	0.10	0.14	135	14.8	116.0	50.5	76	44	o.t.	-	-	-	-
333	Ores, NOS	0.12	0.18	90	22.2	77.3	52.4	79	68	o.t.	-	-	-	-
350	Gravel and Sand	2.04	3.19	110	18.2	94.4	55.5	84	59	C5	12.5	4.44	100	45
351	Stone, Broken, Ground	1.13	1.76	100	20.0	85.8	55.0	83	64	C5	12.5	4.40	100	50
390	Phosphate Rock, Crude	0.38	0.56	65	30.8	55.8	52.1	79	94	C5	12.5	4.17	100	77
391	Sulphur (Brimstone)	0.15	0.23	68	29.4	58.4	56.7	86	97	C5	12.5	4.52	100	74
392	Products of Mines, NOS	1.62	2.30	77	26.0	66.0	50.6	76	77	C5	12.5	4.05	100	65
490	Iron, Pig	0.26	0.39	225	8.9	193.0	54.5	82	28	C5	12.5	4.36	100	27
491	Iron and Steel, Rough	0.24	0.34	225	8.9	193.0	51.0	77	26	C5	12.5	4.08	100	27
500	Rails, Fastenings, etc.	0.07	0.08	180	11.1	154.7	39.8	60	26	flat	-	-	-	-
510	Cast Iron Pipe	0.09	0.06	60	33.3	51.6	23.8	36	46	C12	23.8	1.00	63	46
520	Copper: Ingot, Pig, etc.	0.03	0.03	210	9.5	181.0	44.6	67	25	C5	12.5	3.57	100	24
522	Lead and Zinc: Ingot, etc.	0.09	0.11	225	8.9	193.0	42.9	65	22	C5	12.5	3.43	100	27
523	Aluminum: Ingot, Pig	0.01	0.00	115	17.4	98.7	25.0	38	25	C5	12.5	2.00	100	[illegible]
692	Furnace Slag	0.18	0.29	66	30.3	56.7	56.9	86	100	C5	12.5	4.55	100	76
693	Scrap: Iron and Steel	0.74	0.88	145	13.8	124.5	41.9	63	34	C5	12.5	3.35	100	35
	% Utilization, Weight or Volume							95%					100%	
	TANK													
	(1,100 cu.ft. - 49.7 Tons)	8.58	7.15	55.6	36.0	30.6	29.6	60%	97%	tank	-	-	-	-
360	Petroleum, Crude	0.71	0.69	55	36.4	30.2	34.2	69	113x	tank	-	-	-	-
450	Petroleum, Refined	6.26	4.95	55	36.4	30.2	28.1	57	93	tank	-	-	-	-
451	Fuel and Road Oil	1.38	1.30	58	34.5	31.9	33.4	67	105x	tank	-	-	-	-
460	Cottonseed Oil	0.14	0.11	55	36.4	30.2	29.6	60	98	tank	-	-	-	-
461	Linseed Oil	0.03	0.02	50	40.0	27.5	27.1	55	98	tank	-	-	-	-
472	Molasses, Blackstrap	0.06	0.08	55	36.4	30.2	47.3	95	156x	tank	-	-	-	-
	% Utilization, Weight or Volume							95%						
	FLAT													
	(1,980 cu.ft. - 56.5 Tons)	1.75	1.84	63.5	31.5	62.8	37.3	66%	59%	flat	18.0	1.53	48%	100%
352	Stone, Rough, NOS	0.24	0.35	160	12.5	158.5	52.9	94	33	flat	-	-	-	-
353	Stone, Finished, NOS	0.07	0.06	155	12.9	153.5	33.1	59	21	flat	-	-	-	-
400	Logs	1.19	1.23	37	54.1	36.7	36.7	65	100	flat	-	-	-	-
401	Posts, Poles and Piling	0.25	0.20	30	66.7	29.7	27.6	49	94	c	18.0	1.53	48	100
	% Utilization, Weight or Volume							97%					100%	
	SULPHURIC ACID TANK													
	(926 cu.ft. - 55.9 Tons)	0.15	0.21	110	18.2	50.9	49.6	89%	97%	tank	-	-	-	-
661	Sulphuric Acid	0.15	0.21	110	18.2	50.9	49.6	89	97	tank	-	-	-	-
	% Utilization, Weight or Volume							97%						
	ALL FREIGHT CARS													
	(2,113 cu.ft. - 56.2 Tons)	100.00	100.00	59.8	33.4	63.3	35.5	63%	57%	-	9.2	3.25	67%	90%
										(only those commodities which moved in containers)				
	% Utilization, Weight or Volume							83%					99%	

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* For general notes see Analysis 90.2. (e) 20% of tonnage in gondolas, 80% in C5 container. (f) 89% of tonnage in gondolas, 11% in C5 container. o.t. - open top car. (c) 1/2 on flat cars, 1/2 in C12 container. x These commodities apparently moved in cars of larger cubical capacity than the average open top car or tank car.

Analysis 93.1 Carrier Transportation Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE			
										GROSS	NET		EQUATED
											RAIL	WATER	
RAIL													
Total	$ 809,406	32%	$3,333	$ 152	$29.82	$1.25	$33.16	$ 2.07	$.0783	$.0011	$.0034	-	$.0018
Agency	155,171	6	639	29	5.72	.24	6.36	.40	.0150	.0002	.0007	-	.0003
Movement	342,712	13	1,411	64	12.63	.53	14.04	.88	.0332	.0005	.0015	-	.0008
Assemblage	311,523*	12	1,283	58	11.48	.48	12.76	.80	.0301	.0004	.0013	-	.0007
WATER CARLOT													
Total	$ 63,851	62%	$ 373	$ 587	-	$3.40	$22.71	$ 3.09	-	-	$.0035	$.0020	-
Agency	12,782	12	75	117	-	.68	4.55	.62	-	-	.0007	.0004	-
Movement	45,930	45	268	422	-	2.45	16.34	2.22	-	-	.0025	.0014	-
Assemblage	5,138	5	30	47	-	.27	1.83	.25	-	-	.0003	.0002	-
CARGO													
Total	$ 15,157	88%	$ 163	$3,835	-	$ .53	$21.08	$ 3.39	-	-	$.0008	$.0008	-
Agency	1,295	8	14	328	-	.05	1.80	.29	-	-	.0001	.0001	-
Movement	13,439	78	145	3,401	-	.47	18.69	3.01	-	-	.0007	.0007	-
Assemblage	422	2	5	107	-	.01	.59	.09	-	-	.0000	.0000	-
PIPE													
Total	$ 27,901	13%	$ 301	-	-	$ .33	-	-	-	-	$.0009#	-	-
Agency	1,574	1	17	-	-	.02	-	-	-	-	.0001#	-	-
Movement	17,250	8	186	-	-	.19	-	-	-	-	.0005#	-	-
Assemblage	9,077	4	98	-	-	.11	-	-	-	-	.0003#	-	-

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* Includes Floatage

# Pipe distance

Analysis 93.2 Rail Transportation Unit Costs - 1932

		COST OF RAIL TRANSPORTATION										
	AGGREGATE (000)	PER CENT OF TOTAL COST	PER ROUTE MILE	PER SCHEDULE	PER SCHEDULE HOUR	PER SCHEDULE MILE	PER VEHICLE ORIG. OR EQUATED	PER VEHICLE MILE	PER NET TON	PER NET TON MILE	PER EQUATED TON MILE	PER GROSS TON MILE
TOTAL	$		$	$	$	$	$	$	$	$	$	$
United States	809,406	41%	3,333	151.77	33.16	2.07	29.82	.0783	1.25	.00343	.00178	.00108
Eastern	415,141	43	6,145	161.41	40.43	2.63	28.51	.0886	1.14	.00366	.00189	.00121
Southern	121,817	40	2,360	131.09	27.68	1.72	26.33	.0713	.92	.00257	.00133	.00092
Western	272,448	40	2,054	148.74	27.97	1.67	31.45	.0692	1.60	.00364	.00188	.00100
New England	34,499	43	4,520	139.05	40.48	2.79	21.39	.0997	1.33	.00572	.00296	.00162
Trunk Line	190,207	44	8,818	150.63	44.92	3.22	31.17	.1011	1.16	.00394	.00204	.00136
Central	190,436	41	4,964	179.46	36.76	2.21	27.82	.0774	1.10	.00322	.00166	.00105
Pocahontas	35,874	38	4,632	121.52	27.54	2.11	21.36	.0642	.52	.00168	.00087	.00072
Southeastern	85,943	40	2,466	135.54	27.74	1.60	29.16	.0747	1.36	.00330	.00171	.00105
Western Trunk Line	133,701	40	2,258	145.02	28.85	1.73	27.95	.0739	1.44	.00381	.00197	.00107
Southwestern	59,788	39	1,676	128.16	25.15	1.45	28.45	.0662	1.39	.00337	.00174	.00093
Pacific Northwest	32,709	39	1,650	163.09	27.17	1.69	45.04	.0618	1.96	.00317	.00164	.00088
Pacific Southwest	46,250	41	2,573	190.57	30.35	1.88	43.98	.0663	2.62	.00394	.00204	.00103
AGENCY	$		$	$	$	$	$	$	$	$	$	$
United States	155,171	8%	639	29.10	6.36	.40	5.72	.0150	.24	.00066	.00034	.00021
Eastern	78,977	8	1,169	30.71	7.69	.50	5.42	.0169	.22	.00070	.00036	.00023
Southern	23,340	8	548	25.12	5.30	.33	5.04	.0137	.18	.00049	.00026	.00018
Western	52,854	8	398	28.85	5.43	.32	6.10	.0134	.31	.00071	.00036	.00019
New England	8,357	11	1,095	33.68	9.81	.68	5.18	.0242	.32	.00138	.00072	.00039
Trunk Line	35,424	8	1,642	28.05	8.37	.60	5.81	.0188	.22	.00073	.00038	.00025
Central	35,197	8	918	33.17	6.79	.41	5.14	.0143	.20	.00060	.00031	.00019
Pocahontas	5,565	6	719	18.85	4.27	.33	3.31	.0100	.08	.00026	.00014	.00011
Southeastern	17,775	8	510	28.03	5.74	.33	6.03	.0154	.28	.00068	.00035	.00022
Western Trunk Line	26,545	8	448	28.79	5.73	.34	5.55	.0147	.29	.00076	.00039	.00021
Southwestern	13,195	9	370	28.28	5.55	.32	6.28	.0146	.31	.00074	.00038	.00021
Pacific Northwest	5,239	6	264	26.12	4.35	.27	7.21	.0099	.31	.00051	.00026	.00014
Pacific Southwest	7,874	7	438	32.44	5.17	.32	7.49	.0113	.45	.00067	.00035	.00017
TRAIN MOVEMENT	$		$	$	$	$	$	$	$	$	$	$
United States	342,712	17%	1,411	64.26	14.04	.88	12.63	.0332	.53	.00145	.00075	.00046
Eastern	154,511	16	2,287	60.08	15.05	.98	10.61	.0330	.43	.00136	.00070	.00045
Southern	55,021	18	1,292	59.21	12.50	.78	11.89	.0322	.42	.00116	.00060	.00042
Western	133,181	20	1,004	72.71	13.67	.82	15.37	.0338	.78	.00178	.00092	.00049
New England	14,237	18	1,865	57.38	16.71	1.15	8.83	.0411	.55	.00236	.00122	.00067
Trunk Line	69,175	16	3,207	54.78	16.34	1.17	11.33	.0368	.42	.00143	.00074	.00049
Central	71,099	15	1,853	67.00	13.72	.83	10.38	.0289	.41	.00120	.00062	.00039
Pocahontas	16,626	18	2,147	56.32	12.77	.98	9.90	.0298	.24	.00078	.00040	.00033
Southeastern	38,394	18	1,102	60.55	12.39	.71	13.03	.0334	.61	.00148	.00076	.00047
Western Trunk Line	59,527	18	1,006	64.57	12.84	.77	12.44	.0329	.64	.00170	.00088	.00047
Southwestern	29,626	19	831	63.50	12.46	.72	14.10	.0328	.69	.00167	.00086	.00046
Pacific Northwest	18,774	23	947	93.61	15.59	.97	25.85	.0354	1.13	.00182	.00094	.00050
Pacific Southwest	25,254	23	1,405	104.05	16.57	1.02	24.01	.0362	1.43	.00215	.00111	.00056
ASSEMBLAGE*	$		$	$	$	$	$	$	$	$	$	$
United States	311,523	16%	1,283	58.41	12.76	.80	11.48	.0301	.48	.00132	.00068	.00042
Eastern	181,653	19	2,689	70.63	17.69	1.15	12.47	.0388	.50	.00160	.00083	.00053
Southern	43,456	14	1,020	46.76	9.88	.61	9.39	.0254	.33	.00092	.00047	.00033
Western	86,413	13	651	47.18	8.87	.53	9.97	.0219	.51	.00115	.00060	.00032
New England	11,905	15	1,560	47.98	13.97	.96	7.38	.0344	.46	.00197	.00102	.00056
Trunk Line	85,608	20	3,969	67.80	20.22	1.45	14.03	.0455	.52	.00177	.00092	.00061
Central	84,140	18	2,193	79.29	16.24	.98	12.29	.0342	.49	.00142	.00074	.00046
Pocahontas	13,682	15	1,767	46.35	10.50	.80	8.14	.0245	.20	.00064	.00033	.00027
Southeastern	29,774	14	854	46.96	9.61	.55	10.10	.0259	.47	.00114	.00059	.00036
Western Trunk Line	47,628	14	804	51.66	10.28	.61	9.96	.0263	.51	.00136	.00070	.00038
Southwestern	16,967	11	476	36.37	7.14	.41	8.07	.0188	.39	.00096	.00049	.00026
Pacific Northwest	8,696	10	439	43.36	7.22	.45	11.97	.0164	.52	.00084	.00044	.00023
Pacific Southwest	13,122	12	730	54.07	8.61	.53	12.48	.0188	.74	.00112	.00058	.00029

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* Includes Floatage.

Analysis 93.3 Water Transportation Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	PER TON MILE NET	
								RAIL	WATER
CARLOT									
AGENCY									
United States	$ 12,783	12%	$ 75	$ 117	$ .68	$ 4.55	$ .62	$.0035	$.0020
Atlantic Coast	3,198	13	143	224	.68	4.47	.56	.0018	.0016
Atlantic Gulf	1,683	13	64	1,473	.74	5.94	.59	.0006	.0005
Intercoastal	4,237	11	48	9,763	1.08	5.27	.72	.0004	.0002
Inland Waterways	1,685	20	178	2,492	.74	7.59	1.99	.0011	.0007
Great Lakes	829	11	76	65	.28	3.52	.44	.0007	.0006
Pacific Coast	1,150	12	82	14	.44	2.08	.33	.0011	.0012
VOYAGE									
United States	$ 45,930	45%	$ 268	$ 422	$2.45	$16.34	$ 2.22	$.0025	$.0014
Atlantic Coast	9,129	37	408	640	1.95	12.77	1.60	.0052	.0046
Atlantic Gulf	6,257	47	239	5,479	2.74	22.10	2.21	.0023	.0018
Intercoastal	19,572	50	222	45,095	3.00	24.36	3.31	.0020	.0009
Inland Waterways	2,503	29	264	3,702	1.09	11.28	2.96	.0017	.0011
Great Lakes	3,290	44	300	260	1.10	13.97	1.75	.0029	.0026
Pacific Coast	5,179	55	367	64	2.00	9.38	1.47	.0050	.0054
DOCK									
United States	$ 3,915	.4%	$ 23	$ 36	$ .21	$ 1.39	$ .19	$.0002	$.0001
Atlantic Coast	1,414	6	63	99	.30	1.98	.25	.0008	.0007
Atlantic Gulf	438	3	17	383	.19	1.55	.15	.0002	.0001
Intercoastal	1,007	3	11	2,319	.26	1.25	1.70	.0001	.0000
Inland Waterways	494	6	52	731	.22	2.23	.58	.0003	.0002
Great Lakes	244	3	22	19	.08	1.04	.13	.0002	.0002
Pacific Coast	318	3	23	3	.12	.58	.09	.0003	.0003
FLOATAGE									
United States	$ 1,224	1%	$ 7	$ 11	$ .07	$ .44	$ .06	$.0001	$.0000
Atlantic Coast	730	3	33	51	.16	1.02	.13	.0004	.0004
Atlantic Gulf	336	3	13	294	.15	1.19	.12	.0001	.0001
Intercoastal	76	0	1	175	.02	.09	.01	.0000	.0000
Inland Waterways	15	0	2	22	.01	.07	.02	.0000	.0000
Great Lakes	0	0	0	0	.00	.00	.00	.0000	.0000
Pacific Coast	67	1	5	84	.03	.12	.02	.0001	.0001
CARGO									
AGENCY									
United States	$ 1,295	8%	$ 14	$ 328	$ .05	$ 1.80	$ .29	$.0001	$.0001
Atlantic Coast	47	1	3	90	.01	.52	.09	.0000	.0000
Atlantic Gulf	0	0	0	0	.00	.00	.00	.0000	.0000
Intercoastal	57	31	9	3,542	1.17	1.65	.30	.0004	.0002
Inland Waterways	8	1	2	33	.01	.12	.03	.0000	.0000
Great Lakes	1,087	10	22	498	.05	3.02	.28	.0001	.0001
Pacific Coast	97	26	17	100	.60	.72	.22	.0015	.0015
VOYAGE									
United States	$ 13,439	78%	$ 145	$ 3,401	$ .47	$18.69	$ 3.01	$.0007	$.0007
Atlantic Coast	2,509	77	136	4,843	.74	27.69	4.58	.0012	.0012
Atlantic Gulf	762	62	83	20,064	1.47	24.13	4.73	.0009	.0008
Intercoastal	135	74	22	8,421	2.79	3.91	.70	.0010	.0005
Inland Waterways	295	29	72	1,282	.50	4.35	1.20	.0008	.0005
Great Lakes	9,223	83	187	4,230	.39	25.59	3.21	.0006	.0006
Pacific Coast	515	137	92	530	3.19	3.84	1.16	.0078	.0078
DOCK									
United States	$ 133	1%	$ 1	$ 34	$ .00	$ .18	$ .03	$.0000	$.0000
Atlantic Coast	16	-	1	31	.00	.18	.03	.0000	.0000
Atlantic Gulf	6	0	1	147	.01	.19	.04	.0000	.0000
Intercoastal	6	3	1	352	.12	.17	.03	.0000	.0000
Inland Waterways	14	1	3	61	.02	.21	.06	.0000	.0000
Great Lakes	91	1	2	41	.00	.25	.03	.0000	.0000
Pacific Coast	0	0	0	0	.00	.00	.00	.0000	.0000
FLOATAGE									
United States	$ 290	2%	$ 3	$ 73	$ .01	$ .40	$ .06	$.0000	$.0000
Atlantic Coast	288	9	16	555	.09	2.52	.53	.0001	.0001
Atlantic Gulf	0	0	0	0	.00	.00	.00	.0000	.0000
Intercoastal	0	0	0	0	.00	.00	.00	.0000	.0000
Inland Waterways	0	0	0	0	.00	.00	.00	.0000	.0000
Great Lakes	2	0	0	1	.00	.01	.00	.0000	.0000
Pacific Coast	0	0	0	0	.00	.00	.00	.0000	.0000

Analysis 93.4 Pipe Transportation Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	NET TON	NET TON MILE
TRANSPORTATION					
United States	$ 27,901	13%	$ 301	$ .33	$.0009
North Atlantic Coast	2,552	27	173	.90	.0024
Great Lakes Southwest	12,698	23	284	.51	.0006
Southwest Gulf	12,651	12	380	.23	.0013
AGENCY					
United States	$ 1,574	1%	$ 17	$ .02	$.0001
North Atlantic Coast	149	2	10	.05	.0001
Great Lakes Southwest	723	1	16	.03	.0000
Southwest Gulf	703	1	21	.01	.0001
MOVEMENT					
United States	$ 17,250	8%	$ 186	$ .19	$.0005
North Atlantic Coast	1,134	14	91	.05	.0001
Great Lakes Southwest	8,369	8	187	.33	.0004
Southwest Gulf	7,546	7	227	.14	.0008
ASSEMBLAGE					
United States	$ 9,077	4%	$ 98	$ .11	$.0003
North Atlantic Coast	1,068	11	73	.38	.0010
Great Lakes Southwest	3,606	4	81	.14	.0002
Southwest Gulf	4,402	4	132	.08	.0005

Analysis 95.1 Rail Assemblage Costs

	AGGREGATE (000)	PER CENT OF TOTAL COST	PER ROUTE MILE	PER SCHED-ULE	PER SCHED-ULE HOUR	PER SCHED-ULE MILE	PER VEHI-CLE ORIG. OR EQUAT-ED	PER VEHI-CLE MILE	PER NET TON	PER NET TON MILE	PER EQUAT-ED TON MILE	PER GROSS TON MILE
CLASSIFICATION	$		$	$	$	$	$	$	$	$	$	$
United States	127,919	7%	527	23.99	5.24	.33	4.71	.0124	.20	.00054	.00028	.00017
New England	4,706	6	617	18.97	5.52	.38	2.92	.0136	.18	.00078	.00040	.00022
Trunk Line	31,415	7	1,456	24.88	7.42	.53	5.15	.0167	.19	.00065	.00034	.00022
Central	31,882	7	831	30.04	6.15	.37	4.66	.0130	.18	.00054	.00028	.00018
Pocahontas	6,090	7	786	20.63	4.68	.36	3.63	.0109	.09	.00029	.00015	.00012
Southeastern	14,700	7	422	23.18	4.75	.27	4.99	.0128	.23	.00056	.00029	.00018
Western Trunk Line	21,925	7	370	23.78	4.73	.28	4.58	.0121	.24	.00063	.00032	.00017
Southwestern	7,774	5	218	16.66	3.27	.19	3.70	.0086	.18	.00044	.00023	.00012
Pacific Northwest	3,550	4	179	17.71	2.95	.18	4.89	.0067	.21	.00034	.00018	.00010
Pacific Southwest	5,877	5	327	24.22	3.86	.24	5.59	.0084	.33	.00050	.00026	.00013
TRANSFER - RAIL	$		$	$	$	$	$	$	$	$	$	$
United States	73,310	4%	302	13.74	3.00	.19	2.70	.0071	.11	.00031	.00016	.00010
New England	3,407	4	446	13.72	4.00	.28	2.10	.0099	.14	.00056	.00029	.00016
Trunk Line	18,577	4	861	14.72	4.39	.31	3.04	.0099	.11	.00039	.00020	.00013
Central	24,033	5	627	22.65	4.64	.28	3.51	.0098	.14	.00041	.00021	.00013
Pocahontas	4,023	4	519	13.63	3.09	.24	2.40	.0072	.06	.00019	.00010	.00008
Southeastern	5,526	3	159	8.72	1.78	.10	1.88	.0048	.09	.00021	.00011	.00007
Western Trunk Line	11,224	3	190	12.17	2.42	.14	2.35	.0062	.12	.00032	.00017	.00009
Southwestern	3,966	3	111	8.50	1.67	.10	1.89	.0044	.09	.00022	.00012	.00006
Pacific Northwest	1,314	2	66	6.55	1.09	.07	1.81	.0025	.08	.00013	.00007	.00004
Pacific Southwest	1,239	1	69	5.11	.81	.05	1.18	.0018	.07	.00011	.00005	.00003
TRANSFER - WATER	$		$	$	$	$	$	$	$	$	$	$
United States	12,026	1%	50	2.26	.49	.03	.44	.0012	.02	.00005	.00003	.00002
New England	9	#	1	.04	.01	.00	.01	.0000	.00	*	*	*
Trunk Line	9,505	2	441	7.53	2.24	.16	1.56	.0051	.06	.00020	.00010	.00007
Central	1,353	#	35	1.27	.26	.02	.20	.0006	.01	.00002	.00001	.00001
Pocahontas	491	1	63	1.66	.38	.03	.29	.0009	.01	.00002	.00001	.00001
Southeastern	126	#	4	.20	.04	.00	.04	.0001	.00	*	*	*
Western Trunk Line	47	#	1	.05	.01	.00	.01	.0000	.00	*	*	*
Southwestern	97	#	3	.22	.04	.00	.05	.0001	.00	.00001	*	*
Pacific Northwest	50	#	3	.25	.04	.00	.07	.0001	.00	*	*	*
Pacific Southwest	348	#	19	1.43	.23	.01	.33	.0005	.02	.00003	.00002	.00001
INTERCHANGE	$		$	$	$	$	$	$	$	$	$	$
United States	14,992	1%	62	2.80	.61	.04	.55	.0015	.02	.00006	.00003	.00002
New England	98	#	13	.39	.11	.01	.06	.0003	.00	.00002	.00001	*
Trunk Line	3,554	1	165	2.81	.84	.06	.58	.0019	.02	.00007	.00004	.00003
Central	4,578	1	119	4.31	.88	.05	.67	.0019	.03	.00008	.00004	.00003
Pocahontas	553	1	71	1.87	.42	.03	.33	.0010	.01	.00003	.00001	.00001
Southeastern	1,675	1	48	2.64	.54	.03	.57	.0015	.03	.00006	.00003	.00002
Western Trunk Line	2,417	1	41	2.62	.52	.03	.51	.0013	.03	.00007	.00004	.00002
Southwestern	1,004	1	29	2.15	.42	.02	.48	.0011	.02	.00006	.00003	.00002
Pacific Northwest	305	#	15	1.52	.25	.02	.42	.0006	.02	.00003	.00002	.00001
Pacific Southwest	809	1	45	3.33	.53	.03	.77	.0012	.05	.00007	.00004	.00002
INDUSTRIAL	$		$	$	$	$	$	$	$	$	$	$
United States	83,275	4%	343	15.62	3.41	.21	3.07	.0081	.13	.00035	.00018	.00011
New England	3,685	5	483	14.85	4.32	.30	2.29	.0107	.14	.00061	.00032	.00017
Trunk Line	22,557	5	1,046	17.86	5.33	.38	3.70	.0120	.14	.00047	.00024	.00016
Central	22,295	5	581	21.01	4.30	.26	3.26	.0091	.13	.00038	.00019	.00012
Pocahontas	2,525	3	326	8.55	1.94	.15	1.50	.0045	.04	.00012	.00006	.00005
Southeastern	7,747	4	222	12.22	2.50	.14	2.63	.0067	.12	.00030	.00015	.00009
Western Trunk Line	12,014	4	203	13.03	2.59	.16	2.51	.0066	.13	.00034	.00018	.00010
Southwestern	4,126	3	116	8.84	1.74	.10	1.96	.0046	.10	.00023	.00012	.00006
Pacific Northwest	3,477	4	175	17.33	2.89	.18	4.79	.0066	.21	.00034	.00017	.00009
Pacific Southwest	4,849	4	270	19.98	3.18	.20	4.61	.0070	.27	.00041	.00021	.00011

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* Less than .000005

# Less than 1/2%

Analysis 95.2 Distribution of Switch Engine Time among Services - Summary of all Terminal Districts - 1932

DISTRICT OR TERRITORY	AGGREGATE MINUTES	DISTRIBUTION OF SWITCH ENGINE MINUTES								
		ROAD SERVICE	CLASSIFICATION		TRANSFER		INTERCHANGE		INDUSTRIAL	
		PERCENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL
ALL DISTRICTS										
United States	12,917,706	1%	4.4	40%	4.8	25%	3.7	6%	10.0	28%
Eastern	7,583,789	2	4.3	37	5.1	28	3.6	6	9.5	27
Southern	1,423,999	1	5.9	52	2.9	17	4.5	5	9.7	25
Western	3,909,918	1	4.1	41	4.8	21	3.6	6	11.1	31
New England	108,704	1	2.9	40	4.0	28	3.0	1	7.5	29
Trunk Line	2,524,937	4	5.0	37	5.7	24	4.4	5	9.3	30
Central	4,950,148	1	4.1	38	4.9	30	3.4	6	9.7	26
Pocahontas	119,571	3	4.0	45	4.0	29	4.0	5	6.2	18
Southeastern	1,304,428	#	6.2	53	2.8	16	4.6	5	10.0	25
Western Trunk Line	1,663,574	1	3.7	44	5.4	25	3.6	5	9.6	25
Southwestern	843,378	1	3.8	45	3.6	22	2.5	7	8.4	25
Pacific Northwest	684,417	1	5.9	35	4.7	16	4.3	6	13.7	42
Pacific Southwest	718,549	#	5.2	37	5.8	15	5.7	8	15.6	39
METROPOLITAN DISTRICTS										
United States	11,664,685	1%	4.6	39%	4.8	25%	3.8	6%	10.3	28%
Eastern	7,395,269	2	4.3	37	5.1	28	3.6	6	19.5	27
Southern	1,185,093	#	6.9	54	2.7	15	4.6	6	10.5	25
Western	3,084,323	1	4.3	39	5.0	22	3.9	7	12.1	32
New England	83,980	1	2.9	41	4.1	29	3.1	1	7.7	28
Trunk Line	2,470,704	4	5.0	36	5.7	25	4.4	6	9.3	30
Central	4,840,585	1	4.1	38	4.9	30	3.3	6	9.7	25
Pocahontas	51,032	1	4.7	45	3.5	29	5.4	8	7.3	17
Southeastern	1,134,061	#	7.0	55	2.6	15	4.6	5	10.6	25
Western Trunk Line	1,275,694	1	3.9	41	5.7	27	3.5	5	10.7	26
Southwestern	566,471	#	3.7	44	3.4	21	3.0	8	9.1	27
Pacific Northwest	631,137	1	6.4	34	4.9	16	4.6	7	14.4	42
Pacific Southwest	611,021	#	5.1	33	5.8	17	5.6	9	15.5	40
MAJOR DISTRICTS										
United States	1,253,021	2%	3.6	48%	4.2	20%	2.9	4%	8.0	26%
Eastern	188,520	1	4.1	41	5.1	25	3.7	3	9.4	30
Southern	238,906	3	3.2	44	4.1	24	4.1	5	6.9	25
Western	825,595	2	3.7	51	3.9	18	2.5	4	8.0	25
New England	24,724	4	2.8	36	3.5	27	2.1	#	7.0	33
Trunk Line	54,233	2	4.4	47	6.1	22	2.9	3	9.4	27
Central	109,563	#	4.3	40	5.3	26	4.2	4	10.2	30
Pocahontas	68,539	5	3.6	44	4.6	30	2.7	3	5.7	19
Southeastern	170,367	2	3.1	44	3.9	22	4.6	6	7.4	26
Western Trunk Line	387,880	2	3.2	52	4.2	18	4.5	5	7.1	23
Southwestern	276,907	2	3.8	46	3.8	25	1.4	4	7.1	22
Pacific Northwest	53,280	1	3.5	46	3.0	14	.6	1	8.4	38
Pacific Southwest	107,528	1	5.6	60	5.2	1	6.4	3	16.2	35

# Less than ½%.

Analysis 95.3 Distribution of Switch Engine Time among Services - Eastern District - 1932

TERMINAL DISTRICTS	AGGREGATE MINUTES	DISTRIBUTION OF SWITCH ENGINE MINUTES								
		ROAD SERVICE PERCENT OF TOTAL	CLASSIFICATION		TRANSFER		INTERCHANGE		INDUSTRIAL	
			PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL
METROPOLITAN TERMINALS										
UNITED STATES	11,664,685	1%	4.6	39%	4.8	25%	3.8	6%	10.3	28%
EASTERN DISTRICT	7,395,269	2	4.3	37	5.1	28	3.6	6	9.5	21
Boston, Mass.	33,303	1	2.7	37	3.6	25	4.2	2	8.2	35
Hartford, Conn.	4,951	#	3.0	41	4.2	26	-	-	6.8	32
New Haven, Conn.	17,033	#	2.3	47	4.0	35	-	-	7.8	18
Providence, R.I.	15,061	1	3.9	30	4.9	35	2.2	1	7.3	33
Springfield, Mass.	13,632	1	4.2	57	4.7	25	1.2	2	6.7	16
Baltimore, Md.	34,689	1	5.9	37	8.1	21	5.0	2	11.3	38
Buffalo, N.Y.	120,953	3	4.9	40	6.7	36	3.6	3	10.0	17
New York City	1,902,238	5	5.2	35	5.6	23	4.4	6	9.2	31
Philadelphia, Pa.	211,911	#	5.0	38	5.8	27	3.9	2	10.6	33
Pittsburgh, Pa.	56,207	#	3.0	51	6.5	18	6.4	4	6.6	27
Reading, Pa.	9,213	-	6.4	37	9.2	32	-	-	7.4	32
Scranton, Pa.	18,587	1	4.4	46	7.3	28	4.3	10	7.7	15
Syracuse, N.Y.	65,815	2	4.9	54	3.9	32	19.7	#	12.8	11
Trenton, N.J.	9,600	-	5.4	46	6.9	20	-	-	9.6	34
Washington, D.C.	30,687	-	6.0	33	12.1	22	8.2	2	12.6	43
Wilmington, Del.	10,805	1	4.2	50	7.4	30	8.0	3	15.0	16
Akron, Ohio	16,748	#	3.1	30	3.2	29	1.9	5	7.1	36
Chicago, Ill.	3,039,189	#	4.0	35	4.8	29	3.4	8	10.1	28
Cincinnati, Ohio	462,660	#	4.7	45	5.8	40	3.6	2	8.2	13
Cleveland, Ohio	90,095	4	5.8	45	5.6	31	4.1	3	9.7	17
Columbus, Ohio	47,702	3	4.3	46	5.3	20	4.1	15	7.3	16
Dayton, Ohio	6,325	#	3.8	37	4.8	25	2.3	3	7.3	34
Detroit, Mich.	128,385	1	4.7	36	6.3	38	2.1	2	9.2	24
Evansville, Ind.	29,049	#	6.8	31	7.8	27	0.4	1	13.1	40
Flint, Mich.	15,032	-	3.2	24	2.9	33	1.3	1	9.1	42
Grand Rapids, Mich.	48,068	#	3.9	46	7.8	25	1.4	1	11.2	29
Indianapolis, Ind.	381,054	6	4.2	46	4.1	25	3.3	5	10.7	18
Milwaukee, Wis.	274,835	#	3.5	40	5.2	30	2.5	1	8.4	29
Peoria, Ill.	109,076	1	3.6	43	4.0	33	0.8	1	7.6	23
Toledo, Ohio	146,368	2	4.6	37	5.1	31	4.8	6	8.6	24
Youngstown, Ohio	45,998	1	5.5	31	6.2	32	4.0	3	8.7	33
MAJOR TERMINALS										
UNITED STATES	1,253,021	2%	3.6	48%	4.2	20%	2.9	4%	8.0	26%
EASTERN DISTRICT	188,520	1	4.1	41	5.1	25	3.7	3	9.4	30
Ansonia, Conn.	2,816	-	4.4	20	6.1	36	-	-	9.7	45
Manchester, N. H.	4,747	-	2.7	29	1.8	20	-	-	6.9	52
Pittsfield, Mass.	3,560	17	3.8	40	2.4	25	.9	#	5.2	17
Portland, Maine	13,601	3	2.5	40	4.6	28	2.8	#	6.9	29
Bradford, Pa.	2,880	-	6.7	8	13.2	47	4.5	#	16.2	45
Chambersburg, Pa.	7,238	1	5.2	44	11.0	15	-	-	14.5	40
Elmira, N. Y.	4,976	#	4.0	71	3.7	6	5.7	4	8.4	19
Jamestown, N.Y.	6,105	-	4.5	41	3.5	20	6.0	3	7.4	36
Niagara Falls, N.Y.	22,539	2	4.9	51	5.8	24	2.3	4	8.3	18
North Tonowanda, N.Y.	2,799	-	4.7	22	9.1	40	6.2	2	11.2	36
Watertown, N. Y.	7,696	3	3.3	49	5.5	19	-	-	7.7	29
Anderson, Ind.	6,773	#	3.6	41	10.2	29	7.7	2	14.7	27
Bay City, Mich.	9,033	1	4.8	39	6.3	31	4.8	3	7.5	25
Cairo, Ill.	21,233	-	5.3	33	6.2	29	3.3	5	3.5	33
Harrisburg, Ill.	5,952	#	6.1	47	5.0	34	3.0	1	3.5	18
Kokoma, Ind.	2,940	-	3.9	18	10.5	43	2.0	#	9.2	39
Lima, Ohio	2,400	3	3.7	67	6.9	19	2.5	4	6.8	8
Ludington, Mich.	6,794	1	4.6	51	3.4	31	-	-	8.6	16
Madison, Wis.	15,054	#	4.7	45	6.4	12	7.2	5	2.6	38
Neenah-Menasha, Wis.	5,700	#	4.8	50	6.5	7	6.9	6	12.4	37
Rockford, Ill.	11,052	1	3.3	24	3.8	18	4.6	8	9.0	50
Springfield, Ill.	8,851	-	3.8	43	4.8	33	4.3	4	6.7	19
Terre-Haute, Ind.	13,781	#	3.5	41	4.3	32	2.5	3	16.5	23

Less than 1/2%.

Analysis 95.4 Distribution of Switch Engine Time among Services - Southern District - 1932

TERMINAL DISTRICT	AGGREGATE MINUTES	DISTRIBUTION OF SWITCH ENGINE MINUTES								
		ROAD SERVICE PERCENT OF TOTAL	CLASSIFICATION		TRANSFER		INTERCHANGE		INDUSTRIAL	
			PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL	PER CAR (MIN-UTES)	PER CENT OF TOTAL
METROPOLITAN TERMINALS										
UNITED STATES	11,664,685	1%	4.6	39%	4.8	25%	3.8	6%	10.3	28%
SOUTHERN DISTRICT	1,185,093	#	6.9	54	2.7	15	4.6	6	10.5	25
Norfolk, Va.	44,856	#	5.2	47	3.2	27	6.6	8	7.5	18
Richmond, Va.	6,176	6	2.4	34	5.4	43	1.3	4	5.9	13
Atlanta, Ga.	30,884	#	3.7	37	5.9	18	14.3	12	11.0	33
Birmingham, Ala.	750,546	#	9.2	61	1.5	9	5.2	5	11.0	25
Chattanooga, Tenn.	5,177	-	4.5	48	3.9	11	7.5	11	9.8	31
Jacksonville, Fla.	5,176	2	3.6	35	4.8	20	4.9	8	10.1	36
Louisville, Ky.	27,760	1	9.6	48	7.5	7	5.7	6	25.6	38
Memphis, Tenn.	155,707	#	3.7	45	4.8	28	2.9	4	7.7	23
Nashville, Tenn.	21,238	-	6.5	53	7.2	17	7.4	1	13.8	30
New Orleans, La.	126,938	#	4.2	36	4.6	32	2.9	7	10.5	25
Tampa, Fla.	10,635	1	5.5	39	6.9	30	3.5	4	10.1	27
MAJOR TERMINALS										
UNITED STATES	1,253,021	2%	3.6	48%	4.2	20%	2.9	4%	8.0	26%
SOUTHERN DISTRICT	238,906	3	3.2	44	4.1	24	4.1	5	6.9	24
Charleston, W.Va.	3,355	-	5.9	32	4.3	32	1.9	3	6.7	33
Lynchburg, Va.	4,848	6	3.7	39	4.1	35	2.2	4	4.7	16
Roanoke, Va.	26,137	10	3.4	52	4.4	26	2.4	#	4.8	11
Staunton, Va.	1,440	-	2.7	16	7.4	45	2.9	5	8.1	34
Wheeling, W.Va.	32,759	1	3.7	41	4.7	30	2.9	4	6.3	24
Baton Rouge, La.	16,760	#	4.2	42	4.2	29	2.2	8	5.0	21
Charleston, S.C.	31,289	#	4.4	39	5.2	32	7.7	3	8.1	26
Columbia, S.C.	12,602	4	3.4	51	3.1	15	5.2	6	7.0	25
Columbus, Ga.	8,263	4	2.9	44	27.3	10	9.7	5	6.5	37
Gadsden, Ala.	3,167	-	5.8	23	9.6	35	4.7	6	13.8	36
Hamlet, N.C.	8,114	10	3.4	73	3.4	4	-	-	4.2	14
Jackson, Tenn.	1,476	-	5.0	37	-	-	6.3	33	9.1	30
Lexington, Ky.	12,189	#	5.6	40	10.3	38	3.0	3	7.3	19
Mobile, Ala.	26,935	-	5.5	35	9.9	13	7.2	14	14.4	38
Savannah, Ga.	27,256	-	2.8	50	1.7	25	3.8	5	3.8	20
Valdosta, Ga.	1,440	-	-	-	-	-	17.3	8	37.7	92
Vicksburg, Miss.	16,324	6	4.8	53	6.1	15	-	-	7.7	26
Winston-Salem, N.C.	4,552	#	3.0	36	2.4	37	.8	2	4.4	24

Less [illegible] an %.

Analysis 95.5 Distribution of Switch Engine Time Among Services
Western District - Metropolitan Terminal Districts

TERMINAL DISTRICTS	AGGREGATE MINUTES	DISTRIBUTION OF SWITCH ENGINE MINUTES: ROAD SERVICE PERCENT OF TOTAL	CLASSIFICATION PER CAR (MINUTES)	CLASSIFICATION PER CENT OF TOTAL	TRANSFER PER CAR (MINUTES)	TRANSFER PER CENT OF TOTAL	INTERCHANGE PER CAR (MINUTES)	INTERCHANGE PER CENT OF TOTAL	INDUSTRIAL PER CAR (MINUTES)	INDUSTRIAL PER CENT OF TOTAL
METROPOLITAN TERMINAL										
UNITED STATES	11,664,685	1%	4.6	39%	4.8	25%	3.8	6%	10.3	28%
WESTERN DISTRICT	3,084,323	1	4.3	39	5.0	22	3.9	7	12.1	32
Denver, Colo.	24,398	#	5.6	35	4.9	29	3.0	5	10.3	31
Des Moines, Ia.	34,249	#	4.1	39	5.7	29	3.0	5	9.6	27
Duluth, Minn.	120,072	2	4.2	43	4.2	20	9.3	1	8.2	34
Kansas City, Mo.	119,484	4	3.9	49	9.9	28	-	-	12.1	19
Minneapolis, Minn.	258,620	1	4.9	42	5.2	30	3.3	5	10.5	22
Omaha, Neb.	103,086	1	4.3	29	5.2	24	3.6	10	12.2	36
St. Paul, Minn.	113,764	2	3.4	38	7.0	34	2.6	4	11.8	23
St. Louis, Mo.	355,550	#	3.5	42	5.2	23	3.2	8	11.7	26
Wichita, Kan.	21,962	-	2.6	32	4.2	15	4.4	15	7.5	39
Davenport, Ia.	124,509	1	3.5	42	6.4	31	5.0	5	11.0	21
Dallas, Texas	137,368	#	3.6	39	3.8	11	4.8	9	12.7	41
El Paso, Texas	5,327	#	4.5	31	6.7	44	3.6	5	13.0	20
Fort Worth, Texas	91,638	-	4.8	53	3.7	18	2.9	12	8.9	16
Houston, Texas	183,606	1	3.8	41	3.2	35	2.0	7	4.9	16
Little Rock, Ark.	42,091	1	3.6	54	3.3	14	3.1	3	9.1	28
Oklahoma City, Okla.	21,364	#	3.0	36	2.8	17	3.9	14	8.2	33
San Antonio, Tex.	22,435	-	4.3	35	5.3	22	4.3	8	12.2	34
Tulsa, Okla.	62,642	#	3.1	51	3.4	6	3.8	4	13.3	39
Portland, Ore.	40,935	-	5.0	47	7.7	30	9.7	5	12.0	19
Seattle, Wash.	520,266	1	7.3	32	4.6	16	4.2	7	15.4	45
Spokane, Wash.	30,486	1	3.8	43	6.0	12	6.9	5	8.9	40
Tacoma, Wash.	39,450	#	4.6	45	6.2	8	12.4	9	10.1	38
Los Angeles, Calif.	238,046	-	4.8	35	8.8	8	8.2	13	14.6	44
Salt Lake City, Utah	53,841	#	3.6	59	2.2	5	6.1	9	14.5	27
San Francisco, Calif.	319,134	-	6.4	28	5.6	27	3.6	6	16.5	40

Less than 1/2%.

Analysis 95.6 Distribution of Switch Engine Time Among Services
Western District, Major Terminal Districts - 1932

TERMINAL DISTRICT	AGGREGATE MINUTES	DISTRIBUTION OF SWITCH ENGINE MINUTES: ROAD SERVICE PERCENT OF TOTAL	CLASSIFICATION PER CAR (MINUTES)	CLASSIFICATION PER CENT OF TOTAL	TRANSFER PER CAR (MINUTES)	TRANSFER PER CENT OF TOTAL	INTERCHANGE PER CAR (MINUTES)	INTERCHANGE PER CENT OF TOTAL	INDUSTRIAL PER CAR (MINUTES)	INDUSTRIAL PER CENT OF TOTAL
MAJOR TERMINAL DISTRICT										
UNITED STATES	1,253,021	2%	3.6	48%	4.2	20%	2.9	4%	8.0	26%
WESTERN DISTRICT	825,595	2	3.7	51	3.9	18	2.5	4	8.0	25
Aberdeen, S. D.	14,545	1	3.0	52	3.6	15	4.0	3	6.2	30
Alliance, Neb.	17,507	1	2.1	68	6.1	20	-	-	4.8	10
Atchison, Kan.	9,717	5	4.5	51	6.2	11	6.2	3	10.7	30
Austin, Minn.	12,160	2	3.0	61	5.3	14	-	-	4.5	24
Cedar Rapids, Ia.	33,659	1	3.3	43	3.6	20	3.8	7	9.9	30
Eau Claire, Wis.	13,543	#	4.6	26	3.9	25	7.5	5	8.0	44
Grand Rapids, Mich.	34,443	2	2.4	60	5.4	22	7.3	1	7.0	15
Lady Smith, Wis.	3,885	#	2.8	26	4.3	36	-	-	7.1	38
McCook, Neb.	2,832	2	3.8	57	-	-	-	-	9.8	41
Mason City, Iowa	15,178	3	3.1	52	4.1	23	1.4	2	6.2	21
Minot, N. D.	3,935	-	1.2	4	3.0	53	2.1	2	1.6	41
Norfolk, Neb.	9,387	2	3.4	69	-	-	3.7	9	9.0	20
Rapid City, S. D.	2,804	1	7.8	29	6.4	7	10.5	15	9.4	48
Red Oak, Ia.	1,474	1	4.2	50	3.0	14	-	-	9.1	35
Pueblo, Colo.	56,326	-	4.0	51	4.9	14	8.6	8	12.9	26
St. Joseph, Mo.	61,810	4	3.3	52	3.9	18	4.8	8	9.0	18
Salina, Kans.	14,539	2	3.1	49	3.1	15	4.4	10	5.1	25
Sioux City, Iowa	50,947	1	6.3	56	3.9	25	1.3	2	7.5	17
Sioux Falls, S. D.	8,278	#	4.0	30	8.6	22	7.0	5	7.4	43
Thief River Falls, Minn.	1,903	#	2.5	41	10.6	4	32.0	3	13.1	51
Wilmar, Minn.	19,008	6	2.1	74	-	-	-	-	2.5	20
Albuquerque, N. Mex.	5,434	1	4.4	36	7.0	2	-	-	17.8	61
Alexandria, Ia.	2,965	#	2.5	58	3.5	16	2.9	5	7.4	21
Amarillo, Texas	13,978	#	5.4	44	-	-	5.5	7	9.7	49
Cape Girardeau, Mo.	1,342	-	3.8	39	3.5	16	12.0	3	7.5	43
Enid, Okla.	4,385	1	2.8	46	2.3	17	1.1	9	6.5	27
Fort Smith, Ark.	2,880	#	2.3	18	6.5	47	5.2	13	8.8	22
Galveston, Texas	3,309	-	6.6	42	3.2	44	1.0	5	7.7	9
Harlingon, Texas	8,539	27	3.4	38	10.3	22	6.9	1	6.3	12
Laredo, Texas	5,344	4	5.0	26	6.6	40	3.0	8	8.0	21
Muskogee, Okla.	6,111	-	7.3	57	6.3	18	2.8	3	10.9	22
Pine Bluff, Ark.	7,073	7	5.5	49	18.4	29	6.3	2	11.4	14
Port Arthur, Texas	4,450	2	2.2	27	4.5	56	2.4	#	1.2	14
Shreveport, La.	128,743	1	4.0	43	3.3	35	.9	4	5.9	17
Sweetwater, Texas	2,724	3	5.6	37	5.7	23	1.1	3	9.1	35
Texarkana, Tex.	9,240	3	4.2	65	5.0	19	1.3	1	6.6	12
Tyler, Texas	4,189	7	4.5	46	6.7	25	2.8	3	6.7	19
Waco, Texas	42,303	3	4.2	62	4.0	11	6.2	5	8.7	19
Wichita Falls, Texas	23,398	-	2.1	44	1.8	11	1.6	4	7.7	41
Boise, Idaho	2,880	-	3.9	21	11.9	48	-	1	4.6	31
Casper, Wyo.	15,825	#	2.8	44	1.9	19	.5	2	4.3	34
Ellensburg, Wash.	9,739	1	3.8	75	-	-	-	-	25.0	25
Great Falls, Mont.	21,170	1	3.8	39	4.2	15	2.3	#	13.2	45
The Dalles, Ore.	3,666	-	4.2	46	-	-	-	-	13.3	54
Fresno, Calif.	81,282	-	6.7	60	-	-	6.3	4	18.5	36
Grand Junction, Colo.	13,622	4	3.3	66	3.5	2	11.5	3	16.0	25
Reno-Sparks, Colo.	7,262	-	3.8	57	7.0	9	4.2	4	7.6	31
Phoenix, Ariz.	5,362	-	5.8	42	5.1	4	5.4	2	11.3	52

Less than 1/2%.

Analysis 100.1 Carrier Overhead Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE			
										GROSS	NET		EQUATED
											RAIL	WATER	
RAIL													
Overhead - Total	$371,390	15%	$1,529	$ 70	$13.68	$ .57	$15.22	$ .95	$.0359	$.0005	$.0016	-	$.0008
Administration	178,085	7	733	33	6.57	.28	7.30	.46	.0172	.0002	.0008	-	.0004
Traffic	63,238	2	260	12	2.33	.10	2.59	.16	.0061	.0001	.0008	-	.0001
General	114,847	5	473	22	4.24	.18	4.71	.29	.0111	.0002	.0005	-	.0003
Taxes	193,304	8	796	36	7.13	.30	7.92	.49	.0187	.0003	.0008	-	.0004
WATER													
CARLOT													
Overhead - Total	$ 27,164	27%	$ 159	$ 250	-	$1.45	$ 9.66	$1.31	-	-	$.0015	$.0008	-
Administration	26,220	26	153	241	-	1.40	9.33	1.27	-	-	.0014	.0008	-
Traffic	11,619	11	68	107	-	.62	4.13	.56	-	-	.0006	.0004	-
General	14,601	14	85	134	-	.78	5.19	.71	-	-	.0008	.0004	-
Taxes	944	1	6	9	-	.05	.34	.05	-	-	.0001	.0000	-
CARGO													
Overhead - Total	$ 3,120	18%	$ 34	$ 789	-	$ .11	$ 4.34	$ .70	-	-	$.0002	$.0002	-
Administration	2,942	17	32	744	-	.10	4.09	.66	-	-	.0002	.0001	-
Traffic	502	3	5	127	-	.02	.70	.11	-	-	.0000	.0000	-
General	2,439	14	26	617	-	.09	3.39	.55	-	-	.0001	.0001	-
Taxes	178	1	2	45	-	.01	.25	.04	-	-	.0000	.0000	-
PIPE													
Overhead - Total	$ 25,709	12%	$ 277	-	-	$ .31	-	-	-	-	$.0008#	-	-
Administration	9,657	5	104	-	-	.12	-	-	-	-	.0003#	-	-
Traffic	-	-	-	-	-	-	-	-	-	-	-	-	-
General	9,657	5	104	-	-	.12	-	-	-	-	.0003#	-	-
Taxes	16,051	8	173	-	-	.19	-	-	-	-	.0005#	-	-

# Pipe distance

Analysis 100.2 Water Overhead Unit Costs Carlot Carriers - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE			
										GROSS	NET		EQUATED
											RAIL	WATER	
CARLOT													
OVERHEAD													
United States	$ 27,164	27%	$159	$ 250	-	$1.45	$9.66	$1.31	-	-	$.0015	$.0008	-
Atlantic Coast	4,439	18	198	311	-	.95	6.21	.78	-	-	.0025	.0022	-
Atlantic Gulf	2,319	17	89	2,031	-	1.01	8.19	.82	-	-	.0009	.0007	-
Intercoastal	12,403	32	141	28,578	-	3.17	15.44	2.10	-	-	.0012	.0005	-
Inland Waterways	1,377	16	145	2,037	-	.60	6.20	1.63	-	-	.0001	.0001	-
Great Lakes	2,591	35	237	205	-	.86	11.00	1.38	-	-	.0023	.0020	-
Pacific Coast	4,034	43	286	51	-	1.56	7.31	1.15	-	-	.0039	.0042	-
ADMINISTRATION													
United States	$ 26,220	26%	$153	$ 241	-	$1.40	$9.33	$1.27	-	-	$.0014	$.0008	-
Atlantic Coast	3,851	16	172	270	-	.82	5.39	.68	-	-	.0022	.0019	-
Atlantic Gulf	2,241	17	86	1,963	-	.98	7.91	.79	-	-	.0008	.0007	-
Intercoastal	12,383	32	141	28,532	-	3.16	15.41	2.09	-	-	.0012	.0005	-
Inland Waterways	1,330	16	140	1,968	-	.58	5.99	1.57	-	-	.0001	.0001	-
Great Lakes	2,450	33	224	194	-	.82	10.40	1.30	-	-	.0021	.0019	-
Pacific Coast	3,965	42	281	50	-	1.53	7.18	1.13	-	-	.0039	.0041	-
TRAFFIC													
United States	$ 11,619	11%	$ 68	$ 107	-	$ .62	$4.13	$ .56	-	-	$.0006	$.0004	-
Atlantic Coast	1,995	8	89	140	-	.43	2.79	.35	-	-	.0011	.0010	-
Atlantic Gulf	1,552	12	59	1,359	-	.68	5.48	.55	-	-	.0006	.0005	-
Intercoastal	4,891	13	56	11,270	-	1.25	6.09	.83	-	-	.0005	.0002	-
Inland Waterways	446	5	47	659	-	.19	2.01	.53	-	-	.0000	.0000	-
Great Lakes	889	12	81	70	-	.30	3.77	.47	-	-	.0008	.0007	-
Pacific Coast	1,846	20	131	23	-	.71	3.34	.52	-	-	.0018	.0019	-
GENERAL													
United States	$ 14,601	14%	$ 85	$ 134	-	$ .78	$5.19	$ .71	-	-	$.0008	$.0004	-
Atlantic Coast	1,855	7	83	130	-	.40	2.59	.33	-	-	.0011	.0009	-
Atlantic Gulf	690	5	26	604	-	.30	2.44	.24	-	-	.0003	.0002	-
Intercoastal	7,492	19	85	17,262	-	1.91	9.32	1.27	-	-	.0007	.0003	-
Inland Waterways	885	10	93	1,309	-	.39	3.99	1.05	-	-	.0001	.0000	-
Great Lakes	1,561	21	143	124	-	.52	6.63	.83	-	-	.0014	.0012	-
Pacific Coast	2,119	22	150	27	-	.82	3.84	.60	-	-	.0021	.0022	-
TAXES													
United States	$ 944	1%	$ 6	$ 9	-	$ .05	$ .34	$ .05	-	-	$.0001	$.0000	-
Atlantic Coast	589	2	26	41	-	.13	.82	.10	-	-	.0003	.0003	-
Atlantic Gulf	78	1	3	68	-	.03	.28	.03	-	-	.0000	.0000	-
Intercoastal	20	0	0	46	-	.01	.02	.00	-	-	.0000	.0000	-
Inland Waterways	47	1	5	59	-	.02	.21	.01	-	-	.0000	.0000	-
Great Lakes	141	2	13	11	-	.05	.60	.07	-	-	.0001	.0001	-
Pacific Coast	69	1	5	1	-	.03	.13	.02	-	-	.0001	.0001	-

Analysis 100.3 Water Overhead Unit Costs Cargo Carriers - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE			
										GROSS	NET RAIL	NET WATER	EQUATED
CARGO													
OVERHEAD													
United States	$ 3,120	18%	$ 34	$ 789	-	$ .11	$ 4.34	$ .70	-	-	$ .0002	$ .0002	-
Atlantic Coast	495	15	27	955	-	.15	5.46	.90	-	-	.0002	.0002	-
Atlantic Gulf	3	0	0	75	-	.01	.09	.02	-	-	.0000	.0000	-
Intercoastal	33	18	5	2,082	-	.69	.95	.17	-	-	.0002	.0001	-
Inland Waterways	86	8	21	372	-	.15	1.27	.35	-	-	.0002	.0001	-
Great Lakes	2,408	22	49	1,105	-	.10	6.68	.84	-	-	.0002	.0002	-
Pacific Coast	96	25	17	99	-	.59	.72	.22	-	-	.0015	.0015	-
ADMINISTRATION													
United States	$ 2,942	17%	$ 32	$ 744	-	$ .10	$ 4.09	$ .66	-	-	$ .0002	$ .0001	-
Atlantic Coast	453	14	24	874	-	.13	5.00	.83	-	-	.0002	.0002	-
Atlantic Gulf	3	0	0	74	-	.01	.09	.02	-	-	.0000	.0000	-
Intercoastal	33	18	5	2,082	-	.69	.95	.17	-	-	.0002	.0001	-
Inland Waterways	60	6	15	261	-	.10	.88	.24	-	-	.0002	.0001	-
Great Lakes	2,300	21	47	1,055	-	.10	6.38	.80	-	-	.0001	.0001	-
Pacific Coast	93	25	17	96	-	.58	.69	.21	-	-	.0014	.0014	-
TRAFFIC													
United States	$ 502	3%	$ 5	$ 127	-	$ .02	$ .70	$ .11	-	-	$ .0000	$ .0000	-
Atlantic Coast	53	2	3	103	-	.02	.58	.10	-	-	.0000	.0000	-
Atlantic Gulf	3	0	0	74	-	.01	.09	.02	-	-	.0000	.0000	-
Intercoastal	10	6	2	638	-	.21	.29	.05	-	-	.0001	.0000	-
Inland Waterways	32	3	8	137	-	.05	.47	.13	-	-	.0001	.0000	-
Great Lakes	396	4	8	182	-	.02	1.10	.14	-	-	.0000	.0000	-
Pacific Coast	8	2	2	9	-	.05	.06	.02	-	-	.0001	.0001	-
GENERAL													
United States	$ 2,439	16%	$ 26	$ 617	-	$ .09	$ 3.39	$ .55	-	-	$ .0001	$ .0001	-
Atlantic Coast	399	12	22	771	-	.12	4.40	.73	-	-	.0002	.0002	-
Atlantic Gulf	0	0	0	0	-	0	.00	.00	-	-	.0000	.0000	-
Intercoastal	23	13	4	1,444	-	.48	.67	.12	-	-	.0002	.0001	-
Inland Waterways	28	3	7	124	-	.05	.41	.11	-	-	.0001	.0000	-
Great Lakes	1,904	17	39	873	-	.08	5.28	.66	-	-	.0001	.0001	-
Pacific Coast	85	22	15	87	-	.52	.63	.19	-	-	.0013	.0013	-
TAXES													
United States	$ 178	1%	$ 2	$ 45	-	$ .01	$ .25	$ .04	-	-	$ .0000	$ .0000	-
Atlantic Coast	42	1	2	81	-	.01	.46	.08	-	-	.0000	.0000	-
Atlantic Gulf	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
Intercoastal	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
Inland Waterways	26	3	6	111	-	.04	.38	.11	-	-	.0001	.0000	-
Great Lakes	108	1	2	50	-	.00	.30	.04	-	-	.0000	.0000	-
Pacific Coast	3	1	1	3	-	.02	.02	.01	-	-	.0000	.0000	-

Analysis 100.4 Pipe Overhead.Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	NET TON	NET TON MILE
OVERHEAD					
United States	$ 25,709	12%	$ 277	$ .31	$ .0008
North Atlantic Coast	1,588	17	106	.55	.0015
Great Lakes Southwest	13,617	14	304	.54	.0006
Southwest Gulf	10,534	10	317	.19	.0011
ADMINISTRATION					
United States	$ 9,657	5%	$ 104	$ .12	$ .0003
North Atlantic Coast	854	9	58	.30	.0008
Great Lakes Southwest	4,178	4	93	.19	.0002
Southwest Gulf	4,624	5	139	.08	.0005
TAXES					
United States	$ 16,052	8%	$ 173	$ .19	$ .0005
North Atlantic Coast	704	8	48	.25	.0007
Great Lakes Southwest	9,439	9	211	.38	.0004
Southwest Gulf	5,909	6	178	.11	.0006

SECTION 100. OVERHEAD COSTS

Analysis 100.5 Rail Overhead Unit Costs - 1932

	AGGREGATE (MILLIONS)	PER CENT OF TOTAL COST	PER ROUTE MILE	PER SCHED-ULE	PER SCHED-ULE HOUR	PER SCHED-ULE MILE	PER VEHI-CLE ORIG. OR EQUAT-ED	PER VEHI-CLE MILE	PER NET TON	PER NET TON MILE	PER EQUAT-ED TON MILE	PER GROSS TON MILE
OVERHEAD *	$		$	$	$	$	$	$	$	$	$	$
United States	371,390	19%	1,529	69.64	15.22	.95	13.68	.03594	.57	.00158	.00081	.00050
New England	14,839	19	1,944	59.81	17.41	1.20	9.20	.04289	.58	.00246	.00127	.00069
Trunk Line	81,714	19	3,788	64.72	19.30	1.38	13.39	.04345	.50	.00169	.00088	.00058
Central	86,962	19	2,267	81.95	16.79	1.01	12.70	.03537	.50	.00147	.00076	.00048
Pocahontas	18,522	20	2,392	62.74	14.22	1.09	11.03	.03317	.27	.00087	.00045	.00037
Southeastern	41,452	19	1,189	65.37	13.38	.77	14.07	.03602	.66	.00159	.00082	.00051
Western Trunk Line	62,757	19	1,060	68.07	13.54	.81	13.12	.03471	.68	.00179	.00092	.00050
Southwestern	28,386	19	796	60.85	11.94	.69	13.51	.03145	.66	.00160	.00083	.00044
Pacific Northwest	15,764	19	795	78.60	13.09	.81	21.71	.02976	.95	.00153	.00079	.00042
Pacific Southwest	20,993	19	1,168	86.49	13.78	.85	19.96	.03009	1.19	.00179	.00092	.00047
ADMINISTRATION	$		$	$	$	$	$	$	$	$	$	$
United States	178,085	9%	733	33.39	7.30	.46	6.57	.01723	.28	.00076	.00039	.00024
New England	7,116	9	932	28.68	8.35	.57	4.41	.02056	.27	.00118	.00061	.00033
Trunk Line	39,183	9	1,817	31.05	9.25	.66	6.42	.02083	.24	.00081	.00042	.00028
Central	41,699	9	1,087	39.30	8.05	.48	6.09	.01696	.24	.00071	.00036	.00023
Pocahontas	8,882	10	1,147	30.09	6.82	.52	5.29	.01590	.13	.00042	.00022	.00018
Southeastern	19,877	9	570	31.34	6.42	.37	6.75	.01727	.32	.00076	.00039	.00024
Western Trunk Line	30,093	9	508	32.64	6.49	.39	6.29	.01664	.32	.00086	.00044	.00024
Southwestern	13,612	9	382	29.18	5.73	.33	6.48	.01508	.32	.00077	.00040	.00021
Pacific Northwest	7,559	9	381	37.69	6.28	.39	10.41	.01427	.45	.00073	.00038	.00020
Pacific Southwest	10,066	9	560	41.47	6.61	.41	9.57	.01443	.57	.00086	.00044	.00022
GENERAL	$		$	$	$	$	$	$	$	$	$	$
United States	114,847	6%	473	21.53	4.71	.29	4.24	.01111	.18	.00049	.00025	.00015
New England	4,589	6	601	18.50	5.38	.37	2.84	.01326	.18	.00076	.00039	.00021
Trunk Line	25,269	6	1,171	20.02	5.97	.43	4.14	.01344	.15	.00052	.00027	.00018
Central	26,892	6	701	25.34	5.19	.31	3.93	.01094	.16	.00045	.00024	.00015
Pocahontas	5,728	6	740	19.40	4.40	.34	3.41	.01026	.08	.00027	.00014	.00011
Southeastern	12,818	6	368	20.21	4.14	.24	4.35	.01114	.20	.00049	.00025	.00016
Western Trunk Line	19,407	6	328	21.05	4.19	.25	4.06	.01073	.21	.00055	.00029	.00015
Southwestern	8,778	6	246	18.84	3.69	.21	4.18	.00973	.20	.00049	.00026	.00014
Pacific Northwest	4,875	6	246	24.31	4.05	.25	6.71	.00920	.29	.00047	.00024	.00013
Pacific Southwest	6,492	6	361	26.75	4.26	.26	6.17	.00930	.37	.00055	.00029	.00014
TRAFFIC	$		$	$	$	$	$	$	$	$	$	$
United States	63,238	3%	260	11.86	2.59	.16	2.33	.00612	.10	.00027	.00014	.00009
New England	2,527	3	331	10.18	2.97	.20	1.57	.00730	.09	.00042	.00022	.00012
Trunk Line	13,914	3	645	11.02	3.29	.24	2.28	.00740	.08	.00029	.00015	.00010
Central	14,807	3	386	13.95	2.86	.17	2.16	.00602	.09	.00025	.00013	.00008
Pocahontas	3,154	3	407	10.68	2.42	.19	1.88	.00565	.05	.00015	.00008	.00006
Southeastern	7,058	3	203	11.13	2.28	.13	2.40	.00613	.11	.00027	.00014	.00009
Western Trunk Line	10,686	3	181	11.59	2.31	.14	2.23	.00591	.12	.00030	.00016	.00009
Southwestern	4,833	3	136	10.34	2.03	.12	2.30	.00536	.11	.00027	.00014	.00008
Pacific Northwest	2,684	3	135	13.38	2.23	.14	3.70	.00507	.16	.00026	.00013	.00007
Pacific Southwest	3,575	3	199	14.72	2.35	.14	3.40	.00512	.20	.00030	.00016	.00008
TAXES	$		$	$	$	$	$	$	$	$	$	$
United States	193,305	10%	796	36.25	7.92	.49	7.13	.01871	.30	.00082	.00042	.00026
New England	7,724	10	1,012	31.13	9.06	.62	4.79	.02232	.31	.00128	.00066	.00036
Trunk Line	42,532	10	1,972	33.68	10.04	.72	6.97	.02262	.26	.00088	.00046	.00030
Central	45,263	10	1,180	42.65	8.74	.53	6.61	.01841	.26	.00077	.00040	.00025
Pocahontas	9,641	10	1,245	32.66	7.40	.57	5.74	.01726	.14	.00045	.00023	.00019
Southeastern	21,575	10	619	34.03	6.96	.40	7.32	.01875	.34	.00083	.00043	.00026
Western Trunk Line	32,664	10	552	35.43	7.05	.42	6.83	.01807	.35	.00093	.00048	.00026
Southwestern	14,775	10	414	31.67	6.21	.36	7.03	.01637	.34	.00083	.00043	.00023
Pacific Northwest	8,205	10	414	40.91	6.82	.42	11.30	.01549	.49	.00079	.00041	.00022
Pacific Southwest	10,927	10	608	45.02	7.17	.44	10.39	.01566	.62	.00093	.00048	.00024

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* Does not include Loss and Damage Freight.

SECTION 104. LOCATION COSTS

Analysis 104.1 Carrier Location Unit Costs - 1932

	AGGREGATE (000)	REVE-NUE RATIO	ROUTE MILE	SCHED-ULE	VE-HICLE	NET TON	SCHED-ULE HOUR	SCHED-ULE MILE	VE-HICLE MILE	PER TON MILE GROSS	PER TON MILE NET RAIL	PER TON MILE NET WATER	PER TON MILE EQUAT-ED
RAIL													
Total	$1,965,979	77%	$8,096	$ 369	$ 72.42	$ 3.04	$ 80.55	$ 5.03	$.1903	$.0026	$.0083	-	$.0043
Yard	1,067,714	42	4,397	200	39.33	1.65	43.75	2.73	.1034	.0014	.0045	-	.0023
Road	898,265	35	3,699	168	33.09	1.38	36.80	2.30	.0869	.0012	.0038	-	.0020
WATER CARLOT													
Total	$ 109,540	107%	$ 640	$1,006	-	$ 5.84	$ 38.97	$ 5.30	-	-	$.0060	$.0034	-
Yard	28,620	28	167	263	-	1.52	10.18	1.38	-	-	.0015	.0009	-
Road	80,920	79	473	743	-	4.32	28.79	3.92	-	-	.0045	.0025	-
CARGO													
Total	$ 21,929	128%	$ 236	$5,549	-	$ .77	$ 30.50	$ 4.91	-	-	$.0012	$.0011	-
Yard	2,212	13	24	560	-	.08	3.08	.50	-	-	.0001	.0001	-
Road	19,717	115	212	4,989	-	.69	27.42	4.41	-	-	.0010	.0010	-
PIPE													
Total	$ 101,965	48%	$1,099	-	-	$ 1.23	-	-	-	-	$.0032 #	-	-
Yard	34,779	16	375	-	-	.42	-	-	-	-	.0011#	-	-
Road	67,186	32	724	-	-	.81	-	-	-	-	.0021#	-	-

# Pipe distance

Analysis 104.2 Water Location Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE			
										GROSS	NET		EQUATED
											RAIL	WATER	
CARLOT													
STATION													
United States	$16,878	16%	$ 99	$ 155	-	$ .90	$ 6.00	$ .82	-	-	$.0009	$.0005	-
Atlantic Coast	3,948	16	176	277	-	.84	5.52	.69	-	-	.0022	.0020	-
Atlantic Gulf	1,986	15	76	1,739	-	.87	7.01	.70	-	-	.0007	.0006	-
Intercoastal	5,997	15	68	13,818	-	1.53	7.46	1.01	-	-	.0006	.0003	-
Inland Waterways	2,028	24	214	3,000	-	.88	9.14	2.40	-	-	.0014	.0009	-
Great Lakes	1,204	16	110	95	-	.40	5.11	.64	-	-	.0011	.0009	-
Pacific Coast	1,714	18	122	22	-	.66	3.11	.49	-	-	.0017	.0018	-
DOCK													
United States	$11,742	11%	$ 69	$ 108	-	$ .63	$ 4.18	$ .57	-	-	$.0006	$.0004	-
Atlantic Coast	4,072	16	182	286	-	.87	5.69	.72	-	-	.0023	.0020	-
Atlantic Gulf	2,357	18	90	2,064	-	1.03	8.32	.83	-	-	.0009	.0007	-
Intercoastal	2,692	7	31	6,203	-	.69	3.35	.46	-	-	.0003	.0001	-
Inland Waterways	1,178	14	124	1,743	-	.51	5.31	1.39	-	-	.0008	.0005	-
Great Lakes	595	8	54	47	-	.20	4.53	.32	-	-	.0005	.0005	-
Pacific Coast	848	9	60	11	-	.33	1.54	.24	-	-	.0008	.0009	-
ROAD													
United States	$80,920	79%	$473	$ 743	-	$ 4.31	$ 28.79	$ 3.91	-	-	$.0044	$.0024	-
Atlantic Coast	15,357	62	686	1,077	-	3.28	21.47	2.70	-	-	.0087	.0077	-
Atlantic Gulf	10,831	81	414	9,484	-	4.74	38.25	3.82	-	-	.0040	.0032	-
Intercoastal	33,567	86	381	77,344	-	8.57	41.78	5.68	-	-	.0034	.0015	-
Inland Waterways	4,936	58	520	7,302	-	2.15	22.24	5.83	-	-	.0033	.0021	-
Great Lakes	6,532	88	596	517	-	2.18	27.74	3.47	-	-	.0057	.0051	-
Pacific Coast	9,696	103	688	122	-	3.74	17.57	2.76	-	-	.0094	.0101	-
CARGO													
STATION													
United States	$ 1,554	9%	$ 17	$ 393	-	$ .05	$ 2.16	$ .35	-	-	$.0001	$.0001	-
Atlantic Coast	51	2	3	99	-	.02	.56	.09	-	-	.0000	.0000	-
Atlantic Gulf	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
Intercoastal	63	35	10	3,957	-	1.31	1.82	.33	-	-	.0000	.0000	-
Inland Waterways	10	1	2	42	-	.02	.15	.04	-	-	.0000	.0000	-
Great Lakes	1,321	12	27	606	-	.06	3.67	.46	-	-	.0000	.0000	-
Pacific Coast	109	29	19	112	-	.67	.81	.25	-	-	.0000	.0000	-
DOCK													
United States	$ 659	4%	$ 7	$ 167	-	$ .02	$ .92	$ .15	-	-	$.0000	$.0000	-
Atlantic Coast	440	13	24	850	-	.13	4.86	.80	-	-	.0000	.0000	-
Atlantic Gulf	6	0	1	148	-	.01	.19	.04	-	-	.0000	.0000	-
Intercoastal	47	26	8	2,953	-	.98	1.36	.24	-	-	.0005	.0002	-
Inland Waterways	18	2	4	79	-	.03	.27	.07	-	-	.0000	.0000	-
Great Lakes	147	1	3	67	-	.01	.41	.05	-	-	.0001	.0001	-
Pacific Coast	0	0	0	0	-	.00	.00	.00	-	-	.0016	.0016	-
ROAD													
United States	$19,717	115%	$212	$ 4,989	-	.69	$ 27.42	$ 4.41	-	-	$.0010	$.0010	-
Atlantic Coast	3,805	116	206	7,345	-	1.13	42.00	6.95	-	-	.0002	.0002	-
Atlantic Gulf	989	81	108	26,021	-	1.90	31.31	6.14	-	-	.0000	.0000	-
Intercoastal	207	113	34	12,950	-	4.29	5.99	1.07	-	-	.0003	.0002	-
Inland Waterways	445	44	108	1,934	-	.76	6.56	1.81	-	-	.0001	.0000	-
Great Lakes	13,613	123	275	6,245	-	.57	37.78	4.73	-	-	.0000	.0000	-
Pacific Coast	658	174	118	678	-	4.97	4.91	1.49	-	-	.0000	.0000	-

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Analysis 104.3 Pipe Location Unit Costs

	AGGREGATE (000)	REVENUE	ROUTE MILE	NET TON	NET TON MILE
TOTAL					
United States	$101,964,942	48%	$ 1,098.96	$ 1.23	$ .0032
North Atlantic Coast	6,757,043	73	459.00	2.39	.0064
Great Lakes Southwest	48,485,271	48	1,083.00	1.93	.0023
Southwest Gulf	46,722,628	46	1,404.00	.85	.0049
YARD					
United States	$ 34,779,219	16%	$ 374.84	$ .42	$ .0011
North Atlantic Coast	3,021,601	33	205.23	1.07	.0029
Great Lakes Southwest	15,002,822	15	335.02	.60	.0007
Southwest Gulf	16,754,796	16	503.48	.31	.0018
ROAD					
United States	$ 67,185,723	32%	$ 724.12	$ .81	$ .0021
North Atlantic Coast	3,735,442	40	253.71	1.32	.0035
Great Lakes Southwest	33,482,449	33	747.68	1.33	.0016
Southwest Gulf	29,967,832	29	900.53	.55	.0032

SECTION 104. LOCATION OF COSTS

Analysis 104.4 Rail'Location Unit Costs - 1932

	AGGREGATE (000)	PER CENT OF TOTAL COST	PER ROUTE MILE	PER SCHED-ULE	PER VEHI-CLE	PER NET TON	PER SCHED-ULE HOUR	PER SCHED-ULE MILE	PER VEHI-CLE MILE	TON MILE NET	TON MILE EQUAT-ED	TON MILE GROSS
TOTAL	$		$	$	$	$	$	$	$	$	$	$
United States	1,965,979	100%	8,096	368.64	72.42	3.04	80.55	5.03	.1903	.00834	.00431	.00263
Eastern	976,268	100	14,450	379.58	67.04	2.69	95.09	6.20	.2084	.00861	.00445	.00285
Southern	307,560	100	7,220	330.97	66.48	2.32	69.90	4.35	.1799	.00650	.00336	.00233
Western	682,151	100	5,142	372.40	78.74	4.01	70.04	4.19	.1732	.00911	.00471	.00251
New England	79,483	100	10,413	320.36	49.28	3.07	93.27	6.42	.2297	.01317	.00681	.00372
Trunk Line	431,366	100	19,998	431.62	70.68	2.62	101.88	7.31	.2294	.00894	.00462	.00308
Central	465,419	100	12,133	438.60	67.98	2.69	89.84	5.40	.1893	.00787	.00407	.00256
Pocahontas	93,429	100	12,063	316.49	55.62	1.35	71.73	5.49	.1673	.00439	.00227	.00187
Southeastern	214,131	100	6,144	337.70	72.66	3.40	69.12	3.99	.1861	.00823	.00425	.00262
Western Trunk Line	333,559	100	5,634	361.79	69.73	3.60	71.97	4.31	.1845	.00951	.00492	.00266
Southwestern	153,396	100	4,301	328.81	73.00	3.56	64.53	3.72	.1700	.00864	.00447	.00239
Pacific Northwest	83,297	100	4,202	415.33	114.70	5.00	69.19	4.30	.1573	.00806	.00417	.00223
Pacific Southwest	111,899	100	6,225	461.05	106.40	6.34	73.44	4.54	.1604	.00953	.00493	.00249
ROAD	$		$	$	$	$	$	$	$	$	$	$
United States	898,265	46%	3,699	168.44	33.09	1.39	36.80	2.30	.0869	.00381	.00197	.00120
Eastern	397,533	41	5,885	154.56	27.30	1.10	38.72	2.53	.1848	.00350	.00181	.00116
Southern	154,252	50	3,621	165.99	33.34	1.16	35.05	2.18	.0902	.00326	.00169	.00117
Western	346,480	51	2,612	189.15	39.99	2.04	35.57	2.13	.0880	.00463	.00239	.00127
New England	36,924	46	4,837	148.82	22.89	1.42	43.33	2.98	.1067	.00612	.00316	.00173
Trunk Line	172,478	40	7,996	136.59	28.26	1.05	40.73	2.92	.0917	.00357	.00185	.00123
Central	188,131	40	4,904	177.29	27.48	1.09	36.31	2.18	.0765	.00318	.00164	.00103
Pocahontas	47,830	51	6,176	162.02	28.48	.69	36.72	2.81	.0856	.00225	.00116	.00096
Southeastern	106,422	50	3,054	167.84	36.11	1.69	34.35	1.98	.0925	.00409	.00211	.00130
Western Trunk Line	153,960	46	2,600	166.99	32.18	1.66	33.22	1.99	.0851	.00439	.00227	.00123
Southwestern	81,599	53	2,288	174.92	38.83	1.89	34.33	1.98	.0904	.00460	.00238	.00127
Pacific Northwest	48,971	59	2,470	244.17	67.43	2.93	40.68	2.53	.0926	.00474	.00245	.00131
Pacific Southwest	61,950	55	3,446	255.24	58.90	3.51	40.66	2.51	.0888	.00528	.00273	.00138
YARD	$		$	$	$	$	$	$	$	$	$	$
United States	1,067,714	54%	4,397	200.20	39.33	1.65	43.75	2.73	.1034	.00453	.00234	.00143
Eastern	578,735	59	8,565	225.02	39.74	1.59	56.37	3.67	.1236	.00511	.00264	.00169
Southern	153,308	50	3,599	164.98	33.14	1.16	34.85	2.17	.0897	.00324	.00167	.00116
Western	335,671	49	2,530	183.25	38.75	1.97	34.47	2.06	.0852	.00448	.00232	.00124
New England	42,559	54	5,576	171.54	26.39	1.65	49.94	3.44	.1230	.00705	.00365	.00199
Trunk Line	258,888	60	12,002	205.03	42.42	1.57	61.15	4.39	.1377	.00537	.00277	.00185
Central	277,288	60	7,229	261.31	40.50	1.60	53.53	3.22	.1128	.00469	.00243	.00153
Pocahontas	45,599	49	5,887	154.47	27.14	.66	35.01	2.68	.0817	.00214	.00111	.00091
Southeastern	107,709	50	3,090	169.86	36.55	1.71	34.77	2.01	.0936	.00414	.00214	.00132
Western Trunk Line	179,599	54	3,034	194.80	37.55	1.94	38.75	2.32	.0994	.00512	.00265	.00143
Southwestern	71,797	47	2,013	153.89	34.17	1.67	30.20	1.74	.0796	.00404	.00209	.00112
Pacific Northwest	34,326	41	1,732	171.16	47.27	2.07	28.51	1.77	.0647	.00332	.00172	.00092
Pacific Southwest	49,949	45	2,779	205.81	47.50	2.83	32.78	2.03	.0716	.00425	.00220	.00111

SECTION 104. LOCATION COSTS

Analysis 104.5 Rail Location Cost Percentages - 1932

PURPOSE DISTRICTS AND TERRITORIES	ALL EX-PENSE AND TAXES	OVERHEAD			DIRECT EXPENSE														
						MAINTENANCE WAY AND STRUCTURES					MAINTENANCE EQUIPMENT				TRANSPORTATION				
													FREIGHT CAR						
		TO-TAL OVER-HEAD	AD-MINI-STRA-TION	TAXES	TOTAL DIRECT	TOTAL	ROAD-WAY	POWER STRUC-TURE	STA-TION	WHAR-VES DOCKS	TOTAL	LOCO-MO-TIVE	HOME	FOR-EIGN	TOTAL	MOVE-MENT	SUP-PLIES	STA-TION	FLOAT-AGE
TOTAL ROAD AND YARD	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
ROAD																			
United States	45.7	47.3	47.3	47.3	45.3	77.6	82.3	65.3	14.8	-	31.4	71.8	7.8	10.2	44.3	55.7	8.9	10.3	-
Eastern	40.7	42.4	42.4	42.4	40.3	74.0	79.2	59.8	14.2	-	28.5	65.3	7.3	8.1	39.0	49.7	7.3	9.5	-
Southern	50.2	50.6	50.6	50.6	50.1	81.0	85.6	66.2	13.6	-	36.4	77.5	7.5	18.3	47.1	58.3	11.0	9.9	-
Western	50.8	52.9	52.9	52.9	50.3	80.0	84.3	71.7	16.1	-	33.4	79.0	8.7	12.0	51.1	63.3	10.6	11.6	-
New England	46.5	48.8	48.8	48.8	45.9	75.6	79.7	67.7	15.5	-	31.3	71.3	6.8	7.0	43.8	56.3	7.0	10.6	-
Trunk Line	40.0	41.4	41.4	41.4	39.7	73.4	80.3	61.1	14.7	-	29.5	63.8	6.6	6.9	38.2	49.8	16.2	9.9	-
Central	40.4	42.2	42.2	42.2	40.0	74.1	78.2	57.6	13.2	-	27.2	65.9	8.0	9.2	39.0	48.5	8.4	8.9	-
Pocahontas	51.2	50.9	50.9	50.9	51.3	81.5	87.4	68.6	13.4	-	39.3	77.3	8.4	37.6	47.6	58.4	9.2	8.4	-
Southeastern	49.7	50.4	50.4	50.4	49.5	80.7	84.8	64.4	13.6	-	35.1	77.6	7.1	14.5	46.8	58.2	12.1	10.4	-
Western Trunk Line	46.2	47.9	47.9	47.9	45.8	75.8	81.3	66.6	15.0	-	29.4	74.3	7.1	11.7	46.6	58.2	8.0	10.2	-
Southwestern	53.2	56.1	56.1	56.1	52.5	84.0	86.7	72.3	18.4	-	34.3	80.2	10.3	10.7	52.8	65.5	9.6	14.9	-
Pacific Northwest	58.8	60.7	60.7	60.7	58.4	83.0	84.9	76.0	18.5	-	41.4	86.5	9.2	16.3	59.3	71.5	12.0	12.0	-
Pacific Southwest	55.4	57.7	57.7	57.7	54.8	84.4	88.9	80.6	15.5	-	38.5	85.1	11.8	12.4	56.4	68.7	19.1	10.5	-
YARD																			
United States	54.3	52.7	52.7	52.7	54.7	22.4	17.7	34.7	85.2	100	68.6	28.2	92.2	89.8	55.7	44.3	91.1	89.7	100
Eastern	59.3	57.6	57.6	57.6	59.7	26.0	20.8	40.2	85.8	100	71.5	34.7	92.7	91.9	61.0	50.3	92.7	90.5	100
Southern	49.9	49.4	49.4	49.4	50.0	19.0	14.4	33.8	86.4	100	63.6	22.5	92.5	81.7	52.9	41.7	89.0	90.1	100
Western	49.2	47.1	47.1	47.1	49.7	20.0	15.7	28.3	83.9	100	66.6	21.0	91.3	88.0	48.9	36.7	89.4	88.4	100
New England	53.5	51.2	51.2	51.2	54.1	24.5	20.4	32.3	84.5	100	68.7	28.7	93.2	93.0	56.2	43.7	93.0	89.5	100
Trunk Line	60.0	58.6	58.6	58.6	60.4	26.6	19.7	38.9	85.3	100	70.5	36.3	93.4	93.1	61.8	50.2	93.9	90.1	100
Central	59.6	57.8	57.8	57.8	60.0	25.9	21.8	42.4	86.8	100	72.8	34.1	92.0	90.8	61.0	51.5	91.7	91.1	100
Pocahontas	48.8	49.1	49.1	49.1	48.7	18.5	12.6	31.4	86.6	100	60.7	22.7	91.6	137.6*	52.4	41.6	90.8	91.6	100
Southeastern	50.3	49.6	49.6	49.6	50.5	19.3	15.2	35.6	86.4	100	64.9	22.4	92.9	85.5	53.2	41.8	87.9	89.6	100
Western Trunk Line	53.8	52.1	52.1	52.1	54.3	24.2	18.7	33.4	85.0	100	70.6	25.7	93.0	88.3	53.5	41.8	92.0	89.8	100
Southwestern	46.8	43.9	43.9	43.9	47.5	16.0	13.4	23.7	81.6	100	65.7	19.8	89.7	89.3	47.2	34.5	90.5	85.1	100
Pacific Northwest	41.2	39.3	39.3	39.3	41.7	17.0	15.1	24.0	81.5	100	58.6	13.6	90.8	83.7	40.7	28.5	88.0	88.0	100
Pacific Southwest	44.6	42.3	42.3	42.3	45.2	15.7	11.1	19.4	84.5	100	61.5	15.9	88.2	87.6	43.6	31.3	80.9	89.5	100

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* Credit

Analysis 104.6 Track Service Analysis of Yard Unit Costs - Districts and Territories - 1932

UNIT EXPENSE PER LOADED CAR
CLASSES OF TERMINAL SERVICE

DISTRICT OR TERRITORY	DIS-TRICT TOTAL	SINGLE CARRIER			MULTIPLE CARRIER				INTER-MED-IATE	INTER-CHANGE	ROAD TRAIN
		HOUSE	TEAM	IN-DUS-TRY	CON-NEC-TION DE-LIVERY	HOUSE	TEAM	IN-DUS-TRY			
UNITED STATES	$ 6.36	$12.62	$10.63	$11.41	$12.04	$ 6.15	$12.59	$11.85	$ 4.88	$ 4.80	$ 2.41
EASTERN	6.46	13.02	11.57	11.65	12.34	5.95	11.70	11.20	4.68	4.83	2.52
SOUTHERN	5.38	10.27	8.57	9.29	10.94	5.76	12.21	11.99	7.23	4.52	2.04
WESTERN	6.73	13.38	10.14	12.46	12.07	6.98	13.02	12.61	4.90	4.86	2.44
NEW ENGLAND	6.16	10.13	11.89	10.25	9.28	4.63	9.99	10.65	-	3.37	2.57
TRUNK LINE	6.65	14.12	12.03	11.72	11.93	9.02	13.74	13.52	6.83	4.97	2.76
CENTRAL	6.35	12.80	10.82	11.88	12.62	5.29	10.50	10.77	4.61	4.93	2.30
POCAHONTAS	4.42	11.14	6.04	7.62	10.94	7.19	9.46	10.79	7.75	3.82	1.76
SOUTHEASTERN	5.95	10.02	9.36	10.70	10.95	5.40	14.79	14.24	6.96	4.89	2.23
WESTERN TRUNK LINE	6.87	13.25	10.19	13.27	12.37	7.42	13.32	12.32	4.40	4.89	2.45
SOUTHWESTERN	5.45	10.49	9.33	10.23	9.43	4.37	8.12	10.64	4.93	4.29	1.93
PACIFIC NORTHWEST	8.65	16.18	12.76	13.78	14.53	7.35	11.11	15.47	10.59	7.54	3.57
PACIFIC SOUTHWEST	7.58	19.83	10.51	12.95	14.84	5.58	13.34	18.99	22.15	5.00	2.65

Analysis 104.7 Track Service Analysis of Yard Unit Costs - Eastern District - 1932

UNIT EXPENSE PER LOADED CAR
CLASSES OF TERMINAL SERVICE

	DIS-TRICT TOTAL	SINGLE CARRIER			MULTIPLE CARRIER				INTER-MED-IATE	ROAD HAUL INTER-CHANGE	ROAD TRAIN
		HOUSE	TEAM	IN-DUS-TRY	CON-NEC-TION DE-LIVERY	HOUSE	TEAM	IN-DUS-TRY			
UNITED STATES	$ 6.36	$12.62	$10.63	$11.41	$12.04	$ 6.15	$12.59	$11.85	$ 4.88	$ 4.80	$ 2.41
EASTERN DISTRICT	6.46	13.02	11.57	11.65	12.34	5.95	11.70	11.20	4.68	4.83	2.53
NEW ENGLAND	6.16	10.13	11.89	10.25	9.28	4.63	9.99	10.65	-	3.37	2.57
Boston	10.39	14.06	10.53	10.35	9.65	5.78	11.27	13.15	-	4.84	4.48
Bridgeport	6.33	9.22	11.78	11.04	-	-	-	-	-	-	3.00
Fall River	5.74	7.47	8.21	8.58	-	-	-	-	-	-	1.53
Hartford	7.56	9.65	10.89	9.66	-	-	-	-	-	-	2.37
Lowell	4.25	15.19	8.45	11.58	13.99	-	-	11.80	-	3.65	2.60
Lynn	7.84	7.85	8.44	7.63	-	-	-	-	-	-	-
New Bedford	8.98	14.03	8.32	8.83	-	-	-	-	-	-	1.51
New Haven	5.59	7.31	13.54	15.11	-	-	-	-	-	-	3.00
Providence	8.30	7.77	13.97	10.25	7.71	-	-	-	-	16.46	2.43
Springfield	3.98	6.59	13.41	9.32	8.90	4.88	10.31	9.18	-	3.66	1.49
Worcester	4.27	5.95	6.88	9.82	14.01	3.74	6.93	9.97	-	2.56	2.25
Majors	4.63	8.01	9.74	10.48	7.28	4.80	6.23	7.81	-	3.36	2.68
Minors	8.69	15.12	13.41	9.81	7.01	4.32	16.39	7.85	-	3.75	1.03
TRUNK LINE	$ 6.65	$14.12	$12.03	$11.72	$11.93	$ 9.02	$13.74	$13.52	$ 6.83	$ 4.97	$ 2.76
Albany	14.81	19.00	13.14	16.38	13.07	-	-	17.53	-	5.95	-
Baltimore	9.54	15.30	11.28	10.81	9.88	6.88	18.07	11.42	-	4.58	2.95
Buffalo	7.10	14.65	16.21	12.71	13.84	8.16	11.70	15.29	5.40	5.27	3.37
Erie	9.58	12.03	8.10	12.71	15.22	5.52	10.85	15.29	4.57	8.09	3.19
New York	14.65	19.87	15.37	17.63	16.15	21.67	14.42	13.34	6.14	9.87	12.83
Paterson	10.21	16.37	11.09	10.48	-	-	-	-	-	-	2.57
Philadelphia	10.01	16.01	14.66	14.10	7.75	-	14.69	14.21	11.81	5.48	3.96
Pittsburgh	8.26	11.82	13.51	10.53	10.85	-	15.62	12.49	-	5.92	3.61
Reading	9.75	11.88	15.10	15.06	-	-	-	-	-	6.58	4.24
Rochester	12.20	14.13	10.08	12.20	18.24	6.86	14.10	13.91	-	6.14	-
Scranton	5.68	10.92	20.25	9.27	21.02	-	9.09	28.36	-	5.33	1.60
Syracuse	4.66	14.51	11.91	11.32	9.25	-	-	12.70	-	5.66	2.96
Trenton	9.12	9.10	13.06	15.76	9.38	-	12.09	-	-	9.19	4.29
Utica	5.89	7.90	9.93	11.74	7.88	4.86	-	13.14	3.25	3.69	2.59
Washington	12.11	11.49	12.64	12.40	-	7.56	17.68	17.30	-	14.62	2.89
Wilmington	4.69	10.93	16.37	14.54	16.36	-	9.73	11.21	-	5.66	3.25
Majors.	4.56	10.84	12.06	12.84	10.22	6.74	8.45	12.65	6.59	4.26	2.03
Minors	5.99	12.75	9.10	9.17	11.23	4.20	8.65	8.47	6.48	3.69	2.55
CENTRAL	$ 6.35	$12.80	$10.82	$11.88	$12.62	$ 5.29	$10.50	$10.77	$ 4.61	$ 4.93	$ 2.30
Akron	6.36	10.17	7.68	10.14	7.53	-	5.61	9.70	-	3.32	2.02
Canton	6.09	11.07	13.78	15.12	12.16	5.07	-	15.50	-	4.72	4.01
Chicago	9.46	14.97	14.56	12.51	14.89	5.43	11.29	8.91	3.72	7.69	4.11
Cincinnati	6.87	11.34	13.61	12.96	11.26	5.86	14.38	12.25	9.18	5.02	2.65
Cleveland	8.80	13.30	14.35	16.37	14.41	5.00	11.15	15.97	10.51	7.47	2.62
Columbus	4.32	8.17	11.20	11.41	11.94	5.14	-	10.80	-	4.31	2.45
Dayton	7.42	10.81	13.48	11.07	9.01	5.05	-	12.47	-	4.25	2.35
Detroit	9.19	13.28	10.79	13.57	10.72	4.08	10.46	12.68	5.16	7.08	4.05
Evansville	7.04	13.47	14.01	13.67	12.88	4.94	8.87	11.97	4.85	4.11	2.32
Flint	12.08	15.39	12.89	13.16	8.12	-	-	10.60	-	-	4.02
Fort Wayne	6.88	10.57	15.80	16.23	13.29	4.83	-	11.90	6.45	8.38	3.19
Grand Rapids	9.46	12.93	10.38	17.19	13.03	-	11.55	15.51	14.44	6.37	3.26
Indianapolis	7.38	10.10	14.91	14.65	11.25	5.60	-	14.25	-	4.48	2.81
Milwaukee	10.65	12.42	15.32	14.24	13.10	7.32	14.66	13.54	7.29	10.01	2.82
Peoria	5.32	8.86	7.43	18.91	6.43	4.48	7.34	7.84	4.13	2.54	3.75
South Bend	7.55	10.66	8.44	14.58	12.99	-	-	13.68	3.42	3.26	2.50
Toledo	6.37	9.74	11.92	11.33	10.36	4.93	9.79	12.87	7.85	4.36	4.50
Youngstown	7.52	11.56	12.84	20.94	16.00	-	-	17.94	24.22	4.13	3.18
Majors	4.17	8.65	10.30	11.24	9.85	3.97	10.32	11.02	22.11	3.84	2.07
Minors	7.63	23.09	9.57	10.45	10.34	5.08	7.65	13.11	4.65	3.99	1.81

SECTION 104. LOCATION COSTS

Analysis 104.8 Track Service Analysis of Yard Unit Costs - Southern and Western Districts 1932

UNIT EXPENSE PER LOADED CAR
CLASSES OF TERMINAL SERVICE

	DISTRICT TOTAL	SINGLE CARRIER			MULTIPLE CARRIER						
		HOUSE	TEAM	INDUSTRY	CONNECTION DELIVERY	HOUSE	TEAM	INDUSTRY	INTERMEDIATE	ROAD HAUL INTERCHANGE	ROAD TRAIN
UNITED STATES	$6.36	$12.62	$10.63	$11.41	$12.04	$6.15	$12.59	$11.85	$4.88	$4.80	$2.41
SOUTHERN DISTRICT	5.38	10.27	8.57	9.29	10.94	5.76	12.21	11.99	7.23	4.52	2.04
WESTERN DISTRICT	6.73	13.38	10.14	12.46	12.07	6.98	13.02	12.61	4.90	4.86	2.44
POCAHONTAS	4.42	11.14	6.04	7.62	10.94	7.19	9.46	10.79	7.75	3.82	1.76
Norfolk	11.39	14.75	10.49	12.67	12.15	12.36	11.16	13.04	17.66	7.02	7.58
Richmond	5.28	10.26	7.62	19.98	10.91	9.24	8.90	9.75	8.10	2.88	1.09
Majors	3.19	8.85	9.58	8.54	10.75	4.45	12.19	11.31	7.36	4.48	1.64
Minors	5.21	16.27	4.74	5.96	4.25	3.41	4.81	8.08	1.65	1.39	2.63
SOUTHEASTERN	5.95	10.02	9.36	10.70	10.95	5.40	14.79	14.24	6.96	4.89	2.23
Atlanta	6.94	8.54	10.04	10.26	10.79	3.37	11.27	11.94	9.00	5.07	2.95
Birmingham	6.18	8.69	16.18	12.67	10.28	4.41	-	11.15	-	4.67	2.98
Chattanooga	5.36	8.69	18.99	13.42	13.93	-	-	11.83	33.55	4.47	1.79
Jacksonville	8.12	7.19	13.92	12.55	9.48	5.97	-	12.07	10.40	7.84	2.68
Knoxville	7.42	13.07	21.08	17.81	9.48	-	-	15.32	10.45	6.34	2.84
Louisville	9.40	13.87	14.05	17.36	11.66	9.49	-	18.04	8.07	5.95	2.36
Memphis	7.21	10.30	10.24	11.71	9.97	-	11.85	11.72	3.91	4.49	2.06
Miami	15.39	21.75	19.73	23.41	14.83	-	14.07	17.94	-	8.80	3.69
Nashville	8.67	13.09	14.01	15.68	10.74	-	-	14.15	16.27	5.62	2.49
New Orleans	13.54	17.50	17.88	19.08	10.76	10.90	18.51	14.49	5.07	9.76	9.40
Tampa	12.25	13.45	9.79	23.58	6.95	-	-	22.42	-	4.87	3.08
Majors	4.76	8.32	10.58	13.73	12.67	5.01	15.80	12.49	6.45	5.53	2.19
Minors	6.30	11.67	8.45	7.47	6.40	2.93	7.66	6.61	5.08	3.29	2.06
WESTERN TRUNK LINE	6.87	13.25	10.19	13.27	12.37	7.42	13.32	12.32	4.40	4.89	2.45
Denver	10.17	13.30	13.53	12.85	13.64	6.33	-	14.97	8.24	7.14	4.78
Des Moines	9.29	13.41	28.89	23.19	23.27	7.13	-	20.07	5.36	6.01	3.38
Duluth	18.12	15.39	20.99	23.10	19.20	8.36	9.81	17.15	8.05	10.10	4.42
Kansas City	7.19	12.07	13.11	8.05	14.39	5.93	10.14	8.78	6.11	4.70	3.11
Minneapolis	10.82	14.10	14.21	15.73	18.04	7.93	13.58	15.25	6.53	5.75	3.38
Omaha	8.55	7.31	16.74	19.31	14.82	5.84	21.38	18.27	5.87	4.74	20.13
St. Paul	6.82	9.30	8.50	12.24	7.04	6.41	9.93	13.53	5.45	6.06	3.00
St. Louis	6.68	11.88	10.24	11.77	7.73	6.39	14.79	11.25	4.05	3.62	4.90
Wichita	8.81	8.81	9.41	13.00	8.29	-	-	11.42	4.28	5.21	4.20
Davenport	5.65	10.49	13.19	14.97	13.83	6.55	12.61	16.00	5.79	4.75	3.17
Majors	4.62	10.28	13.12	11.98	12.82	11.18	9.81	13.10	4.96	6.91	2.17
Minors	9.77	19.58	8.88	13.43	8.02	8.27	6.91	12.19	5.62	3.73	2.51
SOUTHWESTERN	5.45	10.49	9.33	10.23	9.43	4.37	8.12	10.64	4.93	4.29	1.93
Dallas	8.21	8.17	9.73	9.32	8.20	-	-	11.35	8.13	5.54	2.52
El Paso	2.96	5.35	3.56	8.15	4.60	4.19	-	7.44	1.88	3.05	1.87
Fort Worth	6.28	8.67	10.36	10.93	9.12	-	11.14	10.84	3.31	4.54	2.05
Houston	8.60	10.36	14.21	12.89	12.75	-	-	14.84	1.74	5.54	2.43
Little Rock	5.06	9.43	8.30	11.86	9.05	-	-	10.96	-	4.19	3.07
Oklahoma City	8.51	9.08	15.68	11.03	9.95	-	-	10.42	2.95	4.72	2.14
San Antonio	6.83	6.87	16.70	14.91	10.12	5.17	-	13.36	-	5.84	4.08
Tulsa	4.90	7.32	8.14	8.71	7.40	-	-	7.74	4.40	4.24	1.94
Majors	4.10	8.45	11.61	11.57	9.65	4.21	12.00	10.82	3.22	4.12	1.80
Minors	7.48	14.48	8.79	9.01	9.95	4.57	6.85	8.36	9.68	4.43	2.13
PACIFIC NORTHWEST	8.65	16.18	12.76	13.78	14.53	7.35	11.11	15.47	10.59	7.54	3.57
Portland	12.46	14.03	16.03	16.95	12.68	-	-	18.46	10.75	10.26	3.85
Seattle	14.59	20.24	16.34	15.28	15.54	9.99	-	11.96	-	10.52	10.88
Spokane	8.01	8.98	13.98	11.33	12.16	4.12	-	13.54	13.63	6.39	5.05
Tacoma	11.00	10.13	13.92	13.25	14.49	-	-	15.13	13.74	6.22	5.58
Majors	6.04	13.08	14.23	14.56	17.94	8.18	14.15	17.65	6.10	6.24	3.27
Minors	12.27	24.41	12.17	12.82	16.30	6.95	8.84	16.16	7.84	7.97	3.58
PACIFIC SOUTHWEST	7.58	19.83	10.51	12.95	14.84	5.58	13.34	18.99	22.15	5.00	2.65
Long Beach	14.54	24.77	3.05	8.46	15.08	-	-	8.26	-	-	-
Los Angeles	15.05	19.23	21.60	17.84	19.22	-	-	17.99	37.05	6.91	9.21
Salt Lake City	7.25	11.59	10.40	14.46	11.70	-	-	16.07	28.35	6.26	3.51
Oakland	12.60	23.26	17.04	19.46	11.77	8.27	36.53	19.50	14.18	11.52	3.85
San Diego	13.09	27.09	14.04	16.01	10.80	-	14.64	19.34	-	7.06	6.24
San Francisco	15.93	22.81	14.13	21.36	14.56	-	11.39	19.74	12.99	7.83	1.93
Majors	5.10	16.61	17.28	15.65	17.66	2.41	17.44	23.24	6.66	4.78	2.37
Minors	8.32	23.03	7.03	9.46	11.93	6.16	-	6.91	2.91	4.28	2.15

SECTION 105. UTILIZATION

Analysis 105.1 Capacity of Rail Terminals in Eastern District

TERMINAL DISTRICT	INDUSTRIES* ON TRACK	NUMBER OF YARDS	YARD TRACK MILES	YARD CAR CAPACITY	YARD ENGINE HOURS	SHOP CAPACITY		
						ENGINE		
						HOUSE	REPAIR	CAR REPAIR
UNITED STATES	197,845	4,753	88,395.41	8,036,584	36,142,335	29,206	791,812	8,322,057
EASTERN DISTRICT	74,741	2,621	38,723.85	3,578,541	20,073,956	13,444	381,457	3,563,059
NEW ENGLAND	7,621	249	2,633.45	243,447	1,136,764	1,420	16,601	185,941
Boston	785	27	270.42	25,892	233,395	218	12	52,740
Bridgeport	102	2	27.97	2,976	21,621	17	-	-
Fall River	25	4	8.02	770	5,834	10	-	-
Hartford	266	4	60.64	6,555	24,388	36	-	4,368
Lowell	157	2	36.85	2,777	17,851	12	-	2,136
Lynn	37	1	7.77	603	2,014	4	-	-
New Bedford	51	3	12.60	1,045	4,450	15	-	-
New Haven	187	16	194.34	14,051	81,704	73	-	50,400
Providence	227	20	86.23	8,859	73,748	27	-	12,456
Springfield	191	5	74.89	6,855	60,734	74	147	11,748
Worcester	163	11	56.53	6,587	50,740	29	-	4,596
Majors	1,869	88	752.78	66,727	346,020	662	16,203	45,867
Minors	3,561	66	1,044.41	99,750	214,265	243	239	1,630
TRUNK LINE	24,372	1,370	14,602.65	1,408,210	8,864,895	3,861	299,881	1,242,134
Albany	193	7	120.81	12,935	66,313	70	1,125	1,225
Baltimore	506	33	351.85	33,348	267,204	94	316	31,273
Buffalo	658	58	939.82	82,184	733,144	211	28,812	71,298
Erie	229	23	154.80	17,841	59,056	31	-	12,045
New York	1,536	170	1,497.94	123,928	1,214,737	395	13,145	118,323
Paterson	133	1	29.40	2,420	10,991	-	-	-
Philadelphia	1,319	70	577.04	63,710	671,660	114	97,967	113,349
Pittsburgh	654	79	605.01	65,272	420,263	118	8,180	21,855
Reading	169	12	83.10	4,989	68,974	29	1,156	17,490
Rochester	532	4	115.50	9,816	92,136	53	5,715	9,403
Scranton	220	8	146.47	13,474	143,940	111	350	8,262
Syracuse	237	13	115.35	18,671	185,356	103	17,854	45,489
Trenton	136	22	43.70	4,607	64,496	-	2,136	3,360
Utica	101	6	99.23	7,970	43,117	53	-	-
Washington	124	10	49.88	4,994	64,122	-	-	-
Wilmington	128	16	88.51	8,893	105,674	43	1,044	15,300
Majors	5,830	524	5,587.41	513,555	2,792,560	2,130	116,308	754,898
Minors	11,667	314	3,996.83	419,603	1,861,152	306	5,773	18,564
CENTRAL	42,748	1,002	21,487.75	1,926,884	10,072,297	7,163	64,975	2,134,984
Akron	297	4	108.61	11,648	76,056	22	1,530	11,765
Canton	208	16	123.00	12,500	65,622	40	6,122	4,284
Chicago	4,664	153	3,441.77	298,235	2,412,430	1,036	1,100	622,708
Cincinnati	753	40	490.06	46,305	558,157	1,597	195	136,297
Cleveland	1,357	25	658.22	71,213	472,112	160	5,068	114,158
Columbus	507	25	439.02	36,035	256,073	181	498	74,875
Dayton	319	8	62.27	5,430	48,669	20	-	655
Detroit	2,195	57	916.73	91,901	501,117	190	4,970	27,902
Evansville	220	6	89.72	8,258	68,388	59	127	41,490
Flint	128	2	92.25	10,116	31,897	10	-	-
Fort Wayne	177	7	111.21	8,109	63,267	77	706	8,421
Grand Rapids	517	8	158.68	15,277	61,588	73	3,525	3,264
Indianapolis	626	19	290.29	23,676	229,996	150	5,258	50,129
Milwaukee	742	13	294.35	29,059	228,032	115	143	47,124
Peoria	260	8	205.18	19,030	104,575	78	25	30,850
South Bend	104	5	58.99	4,570	20,028	15	-	6,951
Toledo	402	19	846.95	62,257	472,978	164	3,274	140,488
Youngstown	200	16	170.75	24,953	137,208	26	1,296	1,790
Majors	9,925	402	6.611.27	575,501	2,684,135	3,751	30.177	743,946
Minors	19,147	169	6,510.45	572,811	1.579,969	399	961	67,887

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* "Industries" includes duplications wherever one industry is served by more than one rail carrier.

SECTION 105. UTILIZATION

Analysis 105.2 Capacity of Rail Terminals - Southern and Western Districts

TERMINAL DISTRICT	INDUSTRIES* ON TRACK	NUMBER OF YARDS	YARD TRACK MILES	YARD CAR CAPACITY	YARD ENGINE HOURS	SHOP CAPACITY		
						ENGINE HOUSE	ENGINE REPAIR	CAR REPAIR
SOUTHERN DISTRICT	29,475	746	13,757.95	1,334,303	5,173,926	3,071	178,026	1,599,954
WESTERN DISTRICT	93,629	1,386	35,913.61	3,123,740	10,894,453	12,691	232,329	3,159,044
POCAHONTAS	4,944	153	3,481.99	324,933	1,411,812	787	40,425	402,932
Norfolk	355	19	422.75	39,414	157,833	60	3,239	52,081
Richmond	418	17	185.44	15,208	110,701	148	293	40,482
Majors	1,758	98	1,430.69	134,493	767,781	564	36,885	306,393
Minors	2,413	19	1,443.11	135,818	375,497	15	8	3,976
SOUTHEASTERN	24,531	593	10,275.96	1,009,370	3,762,114	2,284	137,601	1,197,022
Atlanta	735	8	293.24	21,447	177,579	120	24,836	46,173
Birmingham	494	9	293.33	27,852	167,421	123	673	76,459
Chattanooga	404	6	134.83	11,823	76,740	45	8,574	39,368
Jacksonville	401	20	207.59	17,262	82,489	78	6,472	27,360
Knoxville	378	5	67.88	8,015	67,256	76	9,206	21,219
Louisville	566	15	257.39	21,895	260,874	94	1,621	60,664
Memphis	925	19	379.49	38,669	245,996	101	1,947	50,826
Miami	84	3	60.27	4,125	12,169	27	12	9,180
Nashville	764	11	166.78	14,879	139,388	87	297	45,442
New Orleans	359	11	372.25	32,592	183,735	99	2,330	29,772
Tampa	259	5	81.63	7,901	29,783	17	135	144
Majors	6,896	302	3,301.00	324,511	1,687,482	1,311	78,594	776,766
Minors	12,266	179	4,660.28	478,399	631,202	106	2,904	13,649
WESTERN TRUNK LINE	48,740	706	16,158.94	1,417,408	6,025,451	6,956	75,904	1,582,173
Denver	901	9	258.39	23,781	156,094	141	349	76,730
Des Moines	326	9	116.16	8,140	85,803	134	22	25,794
Duluth	425	39	410.83	35,572	171,533	151	188	35,401
Kansas City	1,136	28	806.08	75,324	726,805	282	5,494	233,787
Minneapolis	1,039	38	526.77	42,658	318,237	222	310	71,150
Omaha	1,007	20	449.04	34,740	286,634	169	24	26,757
St. Paul	731	25	358.61	32,214	236,790	202	404	43,550
St. Louis	1,315	49	1,154.48	97,165	912,819	361	2,063	180,193
Wichita	300	9	132.98	13,738	47,398	46	6,325	7,005
Davenport	451	9	222.04	18,185	102,795	85	178	27,370
Majors	7,981	318	4,666.81	377,892	1,989,238	4,154	60,295	775,689
Minors	33,128	153	7,056.75	657,999	991,305	1,009	252	78,747
SOUTHWESTERN	21,682	350	9,738.84	930,879	2,270,296	2,512	113,005	701,776
Dallas	641	7	155.03	12,535	96,335	24	6,348	8,452
El Paso	162	4	82.77	7,034	57,432	76	2,043	11,232
Fort Worth	259	11	216.32	18,999	123,114	107	6,211	69,014
Houston	677	9	343.97	29,722	217,127	92	3,716	49,083
Little Rock	267	6	152.21	13,860	54,014	83	291	18,330
Oklahoma City	378	5	81.69	7,221	46,190	30	6,005	17,586
San Antonio	328	4	124.19	12,175	41,364	62	3,355	5,787
Tulsa	266	3	95.98	9,220	58,227	25	2,544	15,168
Majors	4,785	182	2,850.06	273,586	1,015,225	1,651	81,269	482,633
Minors	13,919	119	5,636.62	546,527	561,268	362	1,223	24,491
PACIFIC NORTHWEST	11,759	143	4,089.99	348,831	1,145,753	1,574	1,147	366,565
Portland	416	8	247.90	18,513	169,054	97	255	56,661
Seattle	1,122	7	193.26	13,939	83,832	59	11	25,162
Spokane	377	11	156.65	11,718	68,710	90	166	42,378
Tacoma	342	4	153.50	9,315	38,692	42	147	22,599
Majors	2,437	80	1,324.29	108,133	518,886	1,037	568	211,891
Minors	7,065	33	2,014.39	187,213	266,579	219	-	7,874
PACIFIC SOUTHWEST	11,448	187	5,925.84	426,622	1,452,953	1,619	42,273	508,530
Long Beach	20	-	5.79	330	2,099	-	-	-
Los Angeles	1,452	8	338.61	24,803	187,634	128	196	151,002
Salt Lake City	298	8	140.48	15,279	96,026	50	108	16,106
Oakland	448	4	151.36	9,495	137,269	40	2	9,320
San Diego	119	2	27.33	2,290	11,492	10	25	11,400
San Francisco	853	8	249.01	24,949	128,204	62	243	43,160
Majors	1,804	71	1,449.13	117,971	607,393	1,028	36,459	252,236
Minors	6,454	86	3,564.13	231,505	282,836	331	5,240	25,306

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* "Industries" includes duplications wherever one industry is served by more than one rail carrier.

SECTION 105. UTILIZATION

Analysis 105.3 Capacity of Rail Terminals - Major Terminal Districts by States

	INDUSTRIES* ON TRACK	NUMBER OF YARDS	YARD TRACK MILES	YARD CAR CAPACITY	YARD ENGINE HOURS	SHOP CAPACITY		
						ENGINE HOUSE	ENGINE REPAIR	CAR REPAIR
UNITED STATES	43,285	2,062	27,973.44	2,492,369	12,408,720	16,288	456,758	4,350,319
Alabama	1,156	38	479.93	42,402	135,220	158	9,643	103,223
Arizona	315	9	176.42	13,235	53,902	133	18,665	31,485
Arkansas	576	21	284.70	24,170	106,133	144	123	15,055
California	1,040	39	788.75	59,033	381,242	514	12,216	153,830
Colorado	696	22	393.64	37,631	142,077	277	153	81,103
Connecticut	412	12	97.68	11,319	57,535	61	2,552	7,622
Delaware	14	6	37.35	3,547	8,887	4	2,448	1,530
Florida	464	33	309.27	28,577	89,968	74	55	57,569
Georgia	1,933	58	657.54	61,305	287,097	253	16,662	113,851
Idaho	441	6	176.60	17,677	84,628	123	128	38,410
Illinois	2,896	113	2.265.49	186,390	990,315	1,232	1,978	298,712
Indiana	1,588	61	984.80	84,327	433,610	464	374	134,763
Iowa	1,859	68	895.54	71,269	504,204	1,013	583	118,484
Kansas	1,110	65	860.53	79,850	388,306	671	54,184	186,870
Kentucky	587	34	536.33	50,795	272,274	229	3,955	122,979
Louisiana	610	33	383.28	40,578	195,789	208	8,989	47,760
Maine	203	17	174.08	12,995	69,329	190	100	6,342
Maryland	193	14	275.46	23,634	134,683	96	3,870	37,504
Massachusetts	694	33	246.51	21,429	110,238	170	467	16,644
Michigan	2,097	66	1,243.85	105,566	444,944	611	5,223	112,553
Minnesota	821	40	626.60	50,390	202,898	570	330	80,681
Mississippi	731	34	298.29	32,532	177,566	157	537	36,798
Missouri	904	31	580.82	52,266	225,159	439	5,117	92,439
Montana	769	32	406.94	35,960	128,427	481	321	78,109
Nebraska	930	28	510.46	44,058	240,616	432	35	105,530
Nevada	47	2	69.94	6,984	25,888	77	82	13,960
New Hampshire	259	9	93.31	8,365	35,089	101	36	4,224
New Jersey	370	65	232.20	20,265	131,830	62	2,760	28,491
New Mexico	164	12	213.08	21,027	57,332	197	22,447	66,985
New York	1,951	112	1,481.37	130,852	930,259	758	17,174	85,405
North Carolina	1,363	60	486.06	50,708	284,992	198	16,476	140,381
North Dakota	498	15	228.82	18,065	87,302	267	63	15,468
Ohio	2,158	138	1,882.16	172,034	815,276	1,189	22,631	174,644
Oklahoma	859	27	445.90	44,941	184,187	230	26,567	82,276
Oregon	330	17	195.58	12,850	83,292	131	25	18,818
Pennsylvania	3,273	332	3,561.03	335,257	1,586,901	1,210	90,056	601,966
Rhode Island	42	1	7.88	687	3,006	-	-	-
South Carolina	641	22	278.30	32,396	162,246	93	4,780	128,328
South Dakota	485	14	154.33	12,162	68,439	208	4	20,072
Tennessee	279	19	192.97	17,347	82,330	117	25,187	68,201
Texas	2,284	83	1,381.55	132,320	443,650	875	28,892	254,605
Utah	133	6	169.81	12,653	110,687	77	52	21,495
Vermont	259	16	133.32	11,932	70,821	140	13,048	11,035
Virginia	825	52	706.28	67,355	320,421	263	34,180	206,064
Washington	695	22	414.01	27,247	118,328	207	94	63,435
West Virginia	900	46	724.41	67,138	447,360	301	3,169	100,329
Wisconsin	2,037	74	837.39	66,066	367,734	623	116	117,115
Wyoming	394	8	392.88	32,783	126,303	260	211	47,176

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* "Industries" includes duplications wherever one industry is served by more than one rail carrier.

SECTION 105. UTILIZATION

Analysis 105.4 Rail Terminal Cars - Eastern District - 1932

	ALL DELIVERIES			SINGLE CARRIER DELIVERIES				MULTIPLE CARRIER DELIVERIES		
	HOUSE (000)	TEAM (000)	INDUSTRY (000)	HOUSE (000)	TEAM (000)	INDUSTRY (000)	CONNECTION DELVY (000)	HOUSE (000)	TEAM (000)	INDUSTRY (000)
UNITED STATES	17,573	5,479	31,701	17,192	5,307	26,536	6,533	381	172	5,165
EASTERN DISTRICT	8,881	2,810	16,718	8,600	2,735	14,183	3,181	281	75	2,535
NEW ENGLAND	1,167	372	1,368	1,158	368	1,277	108	9	4	91
Boston	167	63	312	166	61	271	50	1	2	41
Bridgeport	25	11	21	25	11	21	-	-	-	-
Fall River	12	3	10	12	3	10	-	-	-	-
Hartford	41	12	24	41	12	24	-	-	-	-
Lowell	4	2	10	4	2	9	1	-	-	1
Lynn	3	2	7	3	2	7	-	-	-	-
New Bedford	5	5	5	5	5	5	-	-	-	-
New Haven	127	6	26	127	6	26	-	-	-	-
Providence	88	22	68	88	22	68	1	-	-	-
Springfield	50	12	36	48	11	30	6	2	1	6
Worcester	53	8	39	51	8	25	12	2	-	14
Majors	366	65	409	364	64	388	17	2	1	21
Minors	226	161	401	224	161	393	21	2	-	8
TRUNK LINE	3,851	1,396	7,258	3,799	1,368	6,856	757	52	28	402
Albany	31	14	65	31	14	52	17	-	-	13
Baltimore	172	77	188	171	76	180	62	1	1	8
Buffalo	173	24	328	145	18	233	193	28	6	95
Erie	28	6	56	28	6	49	17	-	-	7
New York	886	326	621	880	315	596	47	6	11	25
Paterson	4	5	18	4	5	18	-	-	-	-
Philadelphia	327	74	432	327	73	409	34	-	1	23
Pittsburgh	169	52	536	169	50	460	62	-	2	76
Reading	69	5	26	69	5	26	-	-	-	-
Rochester	58	18	63	58	16	53	10	-	2	10
Scranton	46	8	208	46	8	207	1	-	-	1
Syracuse	48	11	90	48	11	85	5	-	-	5
Trenton	100	3	29	100	3	29	-	-	-	-
Utica	83	4	26	81	4	21	4	2	-	5
Washington	32	31	64	31	29	58	-	1	2	6
Wilmington	22	3	28	22	3	21	6	-	-	7
Majors	1,096	256	2,014	1,085	254	1,910	166	11	2	104
Minors	507	479	2,466	504	478	2,449	133	3	1	17
CENTRAL	3,863	1,042	8,092	3,643	999	6,050	2,316	220	43	2,042
Akron	47	7	80	47	7	50	59	-	-	30
Canton	25	2	36	25	2	28	6	-	-	8
Chicago	891	126	1,593	725	109	662	1,027	166	17	931
Cincinnati	193	32	235	189	31	143	108	4	1	92
Cleveland	193	36	339	191	34	232	120	2	2	107
Columbus	135	6	78	126	6	41	35	9	-	37
Dayton	38	5	52	37	5	44	7	1	-	8
Detroit	155	33	413	153	31	278	151	2	2	135
Evansville	31	2	32	30	2	13	18	1	-	19
Flint	5	1	47	5	1	42	9	-	-	5
Fort Wayne	64	4	19	63	4	15	9	1	-	4
Grand Rapids	31	4	47	31	4	37	10	-	-	10
Indianapolis	147	14	128	145	14	94	73	2	-	34
Milwaukee	108	21	191	104	19	1'5	37	4	2	26
Peoria	42	9	71	41	7	18	63	1	2	53
South Bend	12	2	20	12	2	15	6	-	-	5
Toledo	129	9	336	126	7	254	85	3	2	82
Youngstown	24	5	96	24	5	78	33	-	-	18
Majors	1,104	162	2,506	1,083	153	2,171	282	21	9	335
Minors	489	562	1,773	486	556	1,670	178	3	6	103

SECTION 105. UTILIZATION

Analysis 105.5 Rail Terminal Cars - Southern and Western Districts - 1932

	ALL DELIVERIES			SINGLE CARRIER DELIVERIES				MULTIPLE CARRIER DELIVERIES		
	HOUSE (000)	TEAM (000)	INDUSTRY (000)	HOUSE (000)	TEAM (000)	INDUSTRY (000)	CONNECTION DELIVERY (000)	HOUSE (000)	TEAM (000)	INDUSTRY (000)
SOUTHERN DISTRICT	3,271	843	5,824	3,232	829	5,183	770	39	14	641
WESTERN DISTRICT	5,421	1,826	9,159	5,360	1,743	7,170	2,582	61	83	1,989
POCAHONTAS	743	203	2,489	735	196	2,382	152	8	7	107
Norfolk	153	10	319	152	7	305	69	1	3	14
Richmond	82	7	76	79	6	37	34	3	1	39
Majors	416	42	584	413	41	536	38	3	1	48
Minors	92	144	1,510	91	142	1,504	11	1	2	6
SOUTHEASTERN	2,528	640	3,335	2,497	633	2,801	618	31	7	534
Atlanta	109	10	107	105	10	63	42	4	-	44
Birmingham	115	5	77	110	5	59	29	5	-	18
Chattanooga	64	2	31	64	2	21	29	-	-	10
Jacksonville	122	3	55	119	3	29	22	3	-	26
Knoxville	27	2	42	27	2	35	6	-	-	7
Louisville	83	10	111	83	10	65	67	-	-	46
Memphis	118	11	146	118	11	69	80	-	-	77
Miami	7	4	5	7	4	5	-	-	-	-
Nashville	56	3	80	56	3	71	10	-	-	9
New Orleans	92	16	103	88	14	60	104	4	2	43
Tampa	21	1	33	21	1	31	3	-	-	2
Majors	1,056	92	1,004	1,045	88	821	170	11	4	183
Minors	658	481	1,541	654	480	1,472	56	4	1	69
WESTERN TRUNK LINE	3,054	872	4,370	3,006	797	3,069	1,681	48	75	1,301
Denver	55	7	78	52	7	41	43	3	-	37
Des Moines	62	3	47	61	3	31	32	1	-	16
Duluth	64	23	213	62	23	146	66	2	-	67
Kansas City	261	17	495	260	10	202	298	1	7	293
Minneapolis	119	13	186	113	12	91	148	6	1	95
Omaha	105	11	104	103	6	47	177	2	5	57
Saint Paul	102	15	156	102	10	124	60	-	5	32
Saint Louis	357	60	465	335	17	101	417	22	43	364
Wichita	37	2	77	37	2	62	14	-	-	15
Davenport	43	5	62	42	4	49	15	1	1	13
Majors	1,063	123	1,167	1,056	115	916	275	7	8	251
Minors	786	593	1,320	783	588	1,259	132	3	5	61
SOUTHWESTERN	1,431	581	2,378	1,424	578	1,941	547	7	3	437
Dallas	71	6	104	71	6	63	30	-	-	41
El Paso	22	1	27	21	1	15	30	1	-	12
Fort Worth	60	3	75	60	3	24	91	-	-	51
Houston	103	8	148	103	8	126	41	-	-	22
Little Rock	32	3	36	32	3	27	8	-	-	9
Oklahoma City	34	1	64	34	1	40	30	-	-	24
San Antonio	43	4	37	43	4	28	11	-	-	9
Tulsa	34	2	56	34	2	43	16	-	-	13
Majors	560	83	795	556	82	591	209	4	1	204
Minors	472	470	1,036	470	468	984	81	2	2	52
PACIFIC NORTHWEST	405	136	1,033	401	134	932	133	4	2	101
Portland	35	5	88	35	5	72	38	-	-	16
Seattle	35	4	73	35	4	52	23	-	-	21
Spokane	41	1	36	40	1	17	21	1	-	19
Tacoma	14	1	52	14	1	41	14	-	-	11
Majors	177	21	300	174	20	273	19	3	1	27
Minors	103	104	484	103	103	477	18	-	1	7
PACIFIC SOUTHWEST	531	237	1,378	529	234	1.228	221	2	3	150
Long Beach	1	-	2	1	-	1	2	-	-	1
Los Angeles	69	17	127	69	17	72	50	-	-	55
Salt Lake City	32	2	44	32	2	38	8	-	-	6
Oakland	45	8	81	45	8	63	20	-	-	18
San Diego	4	2	6	4	2	5	2	-	-	1
San Francisco	79	25	100	79	23	81	58	-	2	19
Majors	168	31	341	167	30	301	22	1	1	40
Minors	133	152	677	132	152	667	59	1	-	10

Analysis 106.1 Carrier Terminal Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE GROSS	PER TON MILE NET RAIL	PER TON MILE NET WATER	PER TON MILE EQUATED
RAIL													
Terminal - Total	$ 728,512	29%	$3,000	$ 137	$26.84	$1.13	$29.85	$ 1.86	$.0705	$.0010	$.0031	-	$.0016
Station	153,986	6	634	29	5.67	.24	6.31	.39	.0149	.0002	.0007	-	.0003
Delivery	574,526	23	2,366	108	21.16	.89	23.54	1.47	.0556	.0008	.0024	-	.0013
WATER													
CARLOT													
Terminal - Total	$ 26,238	26%	$ 153	$ 241	-	$1.40	$ 9.33	$ 1.27	-	-	$.0014	$.0008	-
Station	16,878	16	99	155	-	.90	6.00	.82	-	-	.0009	.0005	-
Delivery	9,360	9	55	86	-	.50	3.33	.45	-	-	.0005	.0003	-
CARGO													
Terminal - Total	$ 2,079	12%	$ 22	$ 526	-	$ .07	$ 2.89	$ .47	-	-	$.0001	$.0001	-
Station	1,554	9	17	393	-	.05	2.16	.35	-	-	.0001	.0001	-
Delivery	525	3	6	133	-	.02	.73	.12	-	-	.0000	.0000	-
PIPE													
Terminal - Total	$ 34,563	16%	$ 373	-	-	$ .37	-	-	-	-	$.0011#	-	-
Station	7,197	3	78	-	-	.08	-	-	-	-	.0002#	-	-
Delivery	27,366	13	295	-	-	.29	-	-	-	-	.0009#	-	-

Pipe distance

Analysis 106.2 Water Terminal Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	NET TON MILE RAIL	NET TON MILE WATER
CARLOT									
TOTAL TERMINAL									
United States	$ 26,238	26%	$ 153	$ 241	$1.40	$ 9.33	$ 1.27	$.0014	$.0008
Atlantic Coast	7,670	31	343	538	1.64	10.72	1.35	.0043	.0039
Atlantic Gulf	3,342	25	128	2,926	1.46	11.80	1.18	.0012	.0010
Intercoastal	8,228	21	93	18,958	2.10	10.24	1.39	.0008	.0004
Inland Waters	2,984	35	314	4,414	1.30	13.44	3.52	.0020	.0013
Great Lakes	1,656	22	151	131	.55	7.03	.88	.0014	.0013
Pacific Coast	2,360	25	167	30	.91	4.28	.67	.0023	.0025
STATION									
United States	$ 16,878	16%	$ 99	$ 155	$ .90	$ 6.00	$ .82	$.0009	$.0005
Atlantic Coast	3,948	16	176	277	.84	5.52	.69	.0022	.0020
Atlantic Gulf	1,986	15	76	1,739	.87	7.01	.70	.0007	.0006
Intercoastal	5,997	15	68	13,819	1.53	7.46	1.01	.0006	.0003
Inland Waters	2,028	24	214	3,000	.88	9.14	2.40	.0014	.0009
Great Lakes	1,204	16	110	95	.40	5.11	.64	.0011	.0009
Pacific Coast	1,714	18	122	22	.66	3.11	.49	.0017	.0018
DELIVERY									
United States	$ 9,360	9%	$ 55	$ 86	$ .50	$ 3.33	$ .45	$.0005	$.0003
Atlantic Coast	3,721	15	166	261	.80	5.20	.65	.0021	.0019
Atlantic Gulf	1,355	10	52	1,187	.59	4.79	.48	.0005	.0004
Intercoastal	2,230	06	25	5,139	.57	2.78	.38	.0002	.0001
Inland Waters	955	11	101	1,413	.42	4.30	1.13	.0006	.0004
Great Lakes	452	06	41	36	.15	1.91	.24	.0004	.0004
Pacific Coast	646	07	46	8	.25	1.17	.18	.0006	.0007
CARGO									
TOTAL TERMINAL									
United States	$ 2,079	12%	$ 22	$ 526	$ .07	$ 2.89	$ .47	$.0001	$.0001
Atlantic Coast	411	13	22	794	.12	4.54	.75	.0002	.0002
Atlantic Gulf	6	#	1	148	.01	.19	.04	.0001	-
Interpoastal	85	46	14	5,308	1.76	2.46	.44	.0006	.0003
Inland Waters	27	03	7	117	.05	.40	.11	.0001	-
Great Lakes	1,442	13	29	662	.06	4.00	.50	.0001	.0001
Pacific Coast	109	29	19	112	.67	.81	.25	.0016	.0016
STATION									
United States	$ 1,554	9%	$ 17	$ 393	$ .05	$ 2.16	$ .35	$.0001	$.0001
Atlantic Coast	51	02	3	99	.02	.56	.09	-	-
Atlantic Gulf	-	00	-	-	-	.00	.00	-	-
Intercoastal	63	35	10	3,957	1.31	1.82	.33	.0005	.0002
Inland Waters	10	01	2	42	.02	.15	.04	-	-
Great Lakes	1,321	12	27	606	.06	3.67	.46	.0001	-
Pacific Coast	109	29	19	112	.67	.81	.25	.0016	.0016
DELIVERY									
United States	$ 525	3%	$ 6	$ 133	$ .02	$ .73	$ .12	$.0000	$.0000
Atlantic Coast	360	11	19	695	.11	3.97	.66	.0002	.0002
Atlantic Gulf	6	#	1	148	.01	.19	.04	.0001	-
Intercoastal	22	12	4	1,351	.45	.64	.11	.0002	.0001
Inland Waters	17	02	4	75	.03	.25	.07	-	-
Great Lakes	121	01	2	56	.01	.34	.04	-	-
Pacific Coast	-	00	-	-	-	.00	.00	-	-

Less than 1/2 per cent.

Analysis 106.3 Pipe Terminal Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	NET TON	NET TON MILE
TERMINAL TOTAL					
United States	$ 34,779	16%	$ 373	$ .37	$ .0011
North Atlantic Coast	3,022	33	205	1.07	.0029
Great Lakes Southwest	15,003	15	335	.60	.0007
Southwest Gulf	16,755	16	503	.31	.0018
STATION					
United States	$ 7,426	3%	$ 78	$ .08	$ .0002
North Atlantic Coast	334	4	23	.12	.0003
Great Lakes Southwest	3,112	3	69	.12	.0001
Southwest Gulf	3,980	4	120	.07	.0004
DELIVERY					
United States	$ 27,354	13%	$ 295	$ .29	$ .0009
North Atlantic Coast	2,688	29%	183	.95	.0025
Great Lakes Southwest	11,891	12	266	.47	.0006
Southwest Gulf	12,775	12	384	.23	.0014

Analysis 106.4 Rail Terminal Unit Costs - 1932

	AGGREGATE (000)	PER CENT OF TOTAL COST	PER ROUTE MILE	PER SCHELULE	PER VEHICLE	PER NET TON	PER SCHEDULE HOUR	PER SCHEDULE MILE	PER VEHICLE MILE	PER GROSS TON MILE	PER NET TON MILE	PER EQUATED TON MILE
TERMINAL - TOTAL	$		$	$	$	$	$	$	$	$	$	$
United States	728,512	37%	3,000	136.60	26.84	1.13	29.85	1.86	.0705	.00098	.00309	.00160
New England	31,261	39	4,096	125.99	19.38	1.29	36.68	2.53	.0903	.00146	.00518	.00268
Trunk Line	165,842	38	7,689	131.34	27.17	1.01	39.17	2.81	.0882	.00119	.00344	.00178
Central	186,767	40	4,869	176.00	27.28	1.08	36.05	2.17	.0760	.00103	.00316	.00163
Pocahonaas	30,475	33	3,935	103.23	18.14	.44	23.40	1.79	.0546	.00061	.00143	.00074
Southeastern	74,583	35	2,140	117.62	25.31	1.18	24.08	1.39	.0648	.00091	.00287	.00148
Western Trunk Line	129,814	39	2,193	140.80	27.14	1.40	28.01	1.68	.0718	.00103	.00370	.00191
Southwestern	50,079	33	1,404	107.34	23.83	1.16	21.07	1.21	.0555	.00078	.00282	.00146
Pacific Northwest	24,582	30	1,240	122.57	33.85	1.48	20.42	1.27	.0464	.00066	.00238	.00123
Pacific Southwest	35,109	32	1,953	144.66	33.38	1.99	23.04	1.42	.0503	.00078	.00299	.00155
STATION												
United States	$153,986	8%	$ 634	$ 28.87	$ 5.67	$ .24	$ 6.31	$ .39	$.0149	$.00021	$.00065	$.00034
New England	8,506	11	1,114	34.28	5.27	.33	9.98	.69	.0246	.00040	.00141	.00073
Trunk Line	34,901	8	1,618	27.64	5.72	.21	8.24	.59	.0186	.00025	.00072	.00037
Central	34,203	7	892	32.23	5.00	.20	6.60	.40	.0139	.00019	.00058	.00030
Pocahontas	5,765	6	744	19.53	3.43	.08	4.43	.34	.0103	.00012	.00027	.00014
Southeastern	17,034	8	489	26.86	5.78	.27	5.50	.32	.0148	.00021	.00065	.00034
Western Trunk Line	27,218	8	460	29.52	5.69	.29	5.87	.35	.0151	.00022	.00078	.00040
Southwestern	12,277	8	344	26.32	5.84	.28	5.16	.30	.0136	.00019	.00069	.00036
Pacific Northwest	5,418	7	273	27.02	7.46	.33	4.50	.28	.0102	.00015	.00052	.00027
Pacific Southwest	8,664	8	482	35.70	8.24	.49	5.69	.35	.0124	.00019	.00074	.00038
DELIVERY - TOTAL												
United States	$574,526	29%	$2,366	$107.73	$21.16	$ .89	$23.54	$1.47	$.0556	$.00077	$.00244	$.00126
New England	22,755	29	2,981	91.72	14.11	.88	26.70	1.84	.0658	.00107	.00377	.00195
Trunk Line	130,941	30	6,070	103.70	21.46	.80	30.92	2.22	.0696	.00094	.00271	.00140
Central	152,564	33	3,977	143.77	22.28	.88	29.45	1.77	.0620	.00084	.00258	.00133
Pocahontas	24,710	26	3,190	83.70	14.71	.36	18.97	1.45	.0442	.00049	.00116	.00060
Southeastern	57,549	27	1,651	90.76	19.53	.91	18.58	1.07	.0500	.00070	.00221	.00114
Western Trunk Line	102,596	31	1,733	111.28	21.45	1.11	22.14	1.32	.0567	.00082	.00292	.00151
Southwestern	37,802	25	1,060	81.05	17.99	.88	15.90	.92	.0419	.00059	.00213	.00110
Pacific Northwest	19,164	23	967	95.55	26.39	1.15	15.92	.99	.0362	.00051	.00186	.00096
Pacific Southwest	26,445	24	1,471	108.96	25.14	1.50	17.36	1.07	.0379	.00059	.00225	.00117
SINGLE CARRIER DELIVERY												
United States	$429,108	22%	$1,767	$ 80.46	$15.81	$ .66	$17.58	$1.10	$.0415	$.00057	$.00182	$.00094
New England	20,791	26	2,724	83.80	12.89	.80	24.40	1.68	.0601	.00097	.00344	.00178
Trunk Line	116,455	27	5,398	92.23	19.08	.71	27.50	1.97	.0619	.00083	.00241	.00125
Central	98,168	21	2,559	92.51	14.34	.57	18.95	1.14	.0399	.00054	.00166	.00086
Pocahontas	21,949	23	2,833	74.35	13.07	.32	16.85	1.29	.0393	.00044	.00103	.00053
Southeastern	44,240	21	1,269	69.77	15.01	.70	14.28	.82	.0384	.00054	.00170	.00088
Western Trunk Line	62,641	19	1,058	67.94	13.09	.68	13.51	.81	.0346	.00050	.00179	.00092
Southwestern	28,535	19	800	61.17	13.58	.66	12.00	.69	.0316	.00044	.00161	.00083
Pacific Northwest	15,748	19	794	78.52	21.68	.95	13.08	.81	.0297	.00042	.00152	.00079
Pacific Southwest	20,581	18	1,144	84.80	19.57	1.17	13.51	.83	.0295	.00046	.00175	.00091
MULTIPLE CARRIER DELIVERY												
United States	$145,418	7%	$ 599	$ 27.27	$ 5.36	$ .23	$ 5.96	$ .37	$.0141	$.00019	$.00062	$.00032
New England	1,964	2	257	7.92	1.22	.08	2.30	.16	.0057	.00009	.00033	.00017
Trunk Line	14,486	3	672	11.47	2.37	.09	3.42	.24	.0077	.00010	.00030	.00016
Central	54,396	12	1,418	51.26	7.95	.31	10.50	.63	.0221	.00030	.00092	.00048
Pocahontas	2,761	3	356	9.35	1.64	.04	2.12	.16	.0049	.00006	.00013	.00007
Southeastern	13,309	6	382	20.99	4.52	.21	4.30	.25	.0116	.00016	.00051	.00026
Western Trunk Line	39,955	12	675	43.34	8.35	.43	8.62	.52	.0221	.00032	.00114	.00059
Southwestern	9,267	6	260	19.86	4.41	.22	3.90	.22	.0103	.00014	.00052	.00027
Pacific Northwest	3,416	4	172	17.04	4.70	.21	2.84	.18	.0064	.00009	.00033	.00017
Pacific Southwest	5.864	5	326	24.16	5.58	.33	3.85	.24	.0084	.00013	.00050	.00026

Analysis 106.5 Distribution of Terminal Cost per Loaded Car Between Station and Delivery

DISTRICT OR TERRITORY	ALL DELIVERIES HOUSE	ALL DELIVERIES TEAM	ALL DELIVERIES INDUSTRY	SINGLE CARRIER DELIVERIES HOUSE	SINGLE CARRIER DELIVERIES TEAM	SINGLE CARRIER DELIVERIES INDUSTRY	MULTIPLE CARRIER DELIVERIES HOUSE	MULTIPLE CARRIER DELIVERIES TEAM	MULTIPLE CARRIER DELIVERIES INDUSTRY
TERMINAL UNIT COST									
United States	$12.81	$11.17	$13.95	$12.62	$10.63	$11.41	$21.28	$27.72	$26.98
Eastern	13.28	11.90	13.89	13.02	11.57	11.65	21.23	27.39	26.43
Southern	10.37	8.83	10.94	10.27	8.57	9.29	18.05	24.50	24.28
Western	13.49	11.00	15.98	13.38	10.14	12.48	22.94	28.98	28.57
New England	10.17	11.96	10.92	10.13	11.89	10.25	14.30	19.66	20.32
Trunk Line	14.30	12.47	12.86	14.12	12.03	11.72	28.20	33.79	32.46
Central	13.21	11.41	15.31	12.80	10.82	11.88	20.00	25.21	25.48
Pocahontas	11.24	6.60	8.36	11.14	6.04	7.62	21.07	23.34	24.67
Southeastern	10.11	9.55	12.86	10.02	9.36	10.70	17.35	26.74	24.19
Western Trunk Line	13.42	11.88	17.96	13.25	10.19	13.27	24.12	30.02	29.02
Southwestern	10.52	9.41	12.43	10.49	9.33	10.23	15.92	19.67	22.19
Pacific Northwest	16.28	12.95	15.72	16.18	12.76	13.78	25.58	29.34	33.70
Pacific Southwest	19.85	10.78	15.98	19.83	10.51	13.12	25.96	33.72	39.37
STATION UNIT COST									
United States	$ 6.65	$ 1.27	$ .96	$ 6.77	$ 1.27	$ .91	$ 1.26	$ 1.10	$ 1.07
Eastern	6.55	1.12	.97	6.71	1.11	.89	1.59	1.39	1.35
Southern	5.37	.91	.79	5.42	.91	.34	.96	.96	.96
Western	7.58	1.67	1.04	7.66	1.69	1.05	1.03	1.03	1.01
New England	5.55	1.46	1.08	5.58	1.47	1.10	.87	.87	.87
Trunk Line	7.22	.91	.91	7.06	.89	.85	2.70	1.33	1.18
Central	6.39	1.30	1.01	6.71	1.30	.90	1.30	1.31	1.33
Pocahontas	5.97	.58	.51	6.01	.52	.44	2.04	2.04	2.04
Southeastern	5.20	1.02	1.00	5.26	1.02	1.05	.74	.74	.74
Western Trunk Line	7.07	1.77	.95	7.17	1.84	1.00	.88	.87	.85
Southwestern	6.22	1.59	.97	6.24	1.60	.95	1.11	1.17	1.11
Pacific Northwest	9.55	2.08	1.24	9.63	2.08	1.23	1.30	1.30	1.30
Pacific Southwest	12.74	1.20	1.19	12.79	1.20	1.21	1.06	1.06	1.06
DELIVERY UNIT COST									
United States	$ 6.16	$ 9.90	$12.99	$ 5.85	$ 9.36	$10.50	$20.02	$26.62	$25.91
Eastern	6.73	10.78	12.92	6.31	10.46	10.76	19.64	26.00	25.08
Southern	5.00	7.92	10.15	4.85	7.66	8.95	17.09	23.54	23.32
Western	5.91	9.33	14.94	5.72	8.45	11.43	21.91	27.95	27.56
New England	4.62	10.50	9.84	4.55	10.42	9.15	13.43	18.79	19.45
Trunk Line	7.08	11.56	11.95	7.06	11.14	10.87	25.50	32.46	31.28
Central	6.82	10.11	14.30	6.09	9.52	10.98	18.70	23.90	24.15
Pocahontas	5.27	6.02	7.85	5.13	5.52	7.18	19.03	21.30	22.63
Southeastern	4.91	8.53	11.86	4.76	8.34	9.65	16.61	26.00	23.45
Western Trunk Line	6.35	10.11	17.01	6.08	8.35	12.27	23.24	29.15	28.17
Southwestern	4.30	7.82	11.46	4.25	7.73	9.28	14.81	18.50	21.08
Pacific Northwest	6.73	10.87	14.48	6.55	10.68	12.55	24.28	28.04	32.40
Pacific Southwest	7.11	9.58	14.79	7.04	9.31	11.91	24.90	32.66	38.31

Analysis 106.6 Rail Terminal Service - Track Unit Costs - Eastern District - 1932

	COST PER TERMINAL CAR									
	ALL DELIVERIES			SINGLE CARRIER DELIVERIES			MULTIPLE CARRIER DELIVERIES			
TERMINAL DISTRICT	HOUSE TRACK	TEAM TRACK	INDUSTRY TRACK	HOUSE TRACK	TEAM TRACK	INDUSTRY TRACK	HOUSE TRACK	TEAM TRACK	INDUSTRY TRACK	INTERMEDIATE
UNITED STATES	$12.74	$11.07	$13.44	$12.62	$10.63	$11.41	$18.17	$24.45	$23.91	$ 4.88
EASTERN DISTRICT	13.19	11.90	13.45	13.02	11.57	11.65	18.29	24.04	23.54	4.66
NEW ENGLAND	10.16	11.96	10.90	10.13	11.89	10.25	13.91	19.27	19.93	-
Boston	14.07	10.85	11.98	14.06	10.53	10.35	15.43	20.92	22.80	-
Bridgeport	9.22	11.78	11.04	9.22	11.78	11.04	-	-	-	-
Fall River	7.47	8.21	8.58	7.47	8.21	8.58	-	-	-	-
Hartford	9.65	10.89	9.66	9.65	10.89	9.66	-	-	-	-
Lowell	15.19	8.45	12.61	15.19	8.45	11.58	-	-	25.79	-
Lynn	7.85	8.44	7.63	7.85	8.44	7.63	-	-	-	-
New Bedford	14.03	8.32	8.83	14.03	8.32	8.83	-	-	-	-
New Haven	7.31	13.54	15.11	7.31	13.54	15.11	-	-	-	-
Providence	7.77	13.97	10.25	7.77	13.97	10.25	-	-	-	-
Springfield	6.94	13.56	10.87	6.59	13.41	9.32	13.78	19.21	18.08	-
Worcester	6.24	7.34	14.80	5.95	6.88	9.82	17.75	20.94	23.98	-
Majors	8.03	9.78	10.72	8.01	9.74	10.48	12.08	13.51	15.09	-
Minors	15.08	13.42	9.91	15.12	13.41	9.81	11.33	23.40	14.86	-
TRUNK LINE	$14.21	$12.31	$12.48	$14.12	$12.03	$11.72	$20.95	$25.67	$25.45	$6.33
Albany	19.00	13.14	19.30	19.00	13.14	16.38	-	-	30.60	-
Baltimore	15.30	11.57	11.28	15.30	11.28	10.81	16.76	27.95	21.30	-
Buffalo	15.85	18.65	17.47	14.65	16.21	12.71	22.00	25.54	29.13	5.40
Erie	12.05	8.21	15.00	12.03	8.10	12.71	20.74	26.07	30.51	4.57
New York	19.99	15.89	18.12	19.87	15.37	17.63	37.82	30.57	29.49	6.14
Paterson	16.37	11.09	10.48	16.37	11.09	10.48	-	-	-	-
Philadelphia	16.01	14.75	14.53	16.01	14.66	14.10	-	22.44	21.96	11.81
Pittsburgh	11.82	13.97	12.34	11.82	13.51	10.53	-	26.47	23.34	-
Reading	11.88	15.10	15.06	11.88	15.10	15.06	-	-	-	-
Rochester	14.53	12.38	15.42	14.13	10.08	12.20	25.10	32.34	32.15	-
Scranton	10.92	20.51	9.51	10.92	20.25	9.27	-	30.11	49.38	-
Syracuse	14.51	11.91	11.87	14.51	11.91	11.32	-	-	21.95	-
Trenton	9.10	13.12	15.76	9.10	13.06	15.76	-	21.47	-	-
Utica	8.00	9.93	13.35	7.90	9.93	11.74	12.74	-	21.02	3.25
Washington	11.35	13.01	12.86	11.49	12.64	12.40	7.56	17.68	17.30	-
Wilmington	10.93	16.82	17.67	10.93	16.37	14.54	-	26.09	27.57	-
Majors	10.91	12.10	13.36	10.84	12.06	12.84	16.96	18.67	22.87	6.59
Minors	12.77	9.11	9.25	12.75	9.10	9.17	15.43	19.88	19.70	6.48
CENTRAL	$13.09	$11.33	$14.78	$12.80	$10.82	$11.88	$17.91	$23.12	$23.39	$4.61
Akron	10.17	7.87	12.83	10.17	7.68	10.14	-	13.14	17.23	-
Canton	11.16	13.78	17.94	11.07	13.78	15.12	17.23	-	27.66	-
Chicago	15.97	16.10	19.11	14.97	14.56	12.51	20.32	26.18	23.80	3.72
Cincinnati	11.45	14.04	17.08	11.34	13.61	12.96	17.12	25.64	23.51	9.18
Cleveland	13.35	14.95	20.79	13.30	14.35	16.37	19.41	25.56	30.38	10.51
Columbus	8.73	11.20	16.78	8.17	11.20	11.41	17.08	-	22.74	-
Dayton	10.87	13.48	12.58	10.81	13.48	11.07	14.06	-	21.48	-
Detroit	13.30	11.51	16.79	13.28	10.79	13.57	14.80	21.18	23.40	5.16
Evansville	13.65	14.28	20.30	13.47	14.01	13.67	17.82	21.75	24.85	4.85
Flint	15.39	12.89	13.79	15.39	12.89	13.16	-	-	18.72	-
Fort Wayne	10.63	15.80	18.13	10.57	15.80	16.23	18.12	-	25.19	6.45
Grand Rapids	12.93	12.17	19.47	12.93	10.38	17.19	-	24.58	28.54	14.44
Indianapolis	10.21	14.91	17.52	10.10	14.91	14.65	16.85	-	25.50	-
Milwaukee	12.74	16.45	15.94	12.42	15.32	14.24	20.42	27.76	26.64	7.29
Peoria	8.93	8.61	15.47	8.86	7.43	18.91	10.91	13.77	14.27	4.13
South Bend	10.66	8.44	17.71	10.66	8.44	14.58	-	-	26.67	3.42
Toledo	9.87	13.48	14.24	9.74	11.92	11.33	15.29	20.15	23.23	7.85
Youngstown	11.56	12.84	23.40	11.56	12.84	20.94	-	-	33.94	24.22
Majors	8.75	10.84	12.52	8.65	10.30	11.24	13.82	20.17	20.87	22.11
Minors	23.04	9.66	11.21	23.09	9.57	10.45	15.42	17.99	23.45	4.65

Analysis 106.7 Rail Terminal Service - Track Unit Costs - 1932
Southern and Western Districts

TERMINAL DISTRICT	COST PER TERMINAL CAR									
	ALL DELIVERIES			SINGLE CARRIER DELIVERIES			MULTIPLE CARRIER DELIVERIES			
	HOUSE TRACK	TEAM TRACK	INDUSTRY TRACK	HOUSE TRACK	TEAM TRACK	INDUSTRY TRACK	HOUSE TRACK	TEAM TRACK	INDUSTRY TRACK	INTERMEDIATE
UNITED STATES	$12.74	$11.07	$13.44	$12.62	$10.63	$11.41	$18.17	$24.45	$23.91	$4.88
SOUTHERN DISTRICT	10.35	8.81	10.79	10.27	8.57	9.29	16.70	23.15	22.93	7.23
WESTERN DISTRICT	13.45	10.83	15.11	13.38	10.14	12.46	19.05	25.09	24.68	4.90
POCAHONTAS	11.21	6.50	8.23	11.14	6.04	7.62	18.13	20.40	21.73	7.75
Norfolk	14.79	14.60	13.23	14.75	10.49	12.67	24.51	23.31	25.19	17.66
Richmond	10.67	9.12	20.33	10.26	7.62	19.98	20.15	19.81	20.66	8.10
Majors	8.90	9.87	9.65	8.85	9.58	8.54	15.20	22.94	22.06	7.36
Minors	16.23	4.79	5.99	16.27	4.74	5.96	7.66	9.06	12.33	1.65
SOUTHERN	10.10	9.54	12.70	10.02	9.36	10.70	16.35	25.74	25.19	6.96
Atlanta	8.76	10.54	15.37	8.54	10.04	10.26	14.16	22.06	22.73	9.00
Birmingham	8.94	16.18	14.73	8.69	16.18	12.67	14.69	-	21.43	-
Chattanooga	8.69	18.99	17.37	8.69	18.99	13.42	-	-	25.76	33.55
Jacksonville	7.35	13.92	16.81	7.19	13.92	12.55	15.45	-	21.55	10.40
Knoxville	13.07	21.08	18.98	13.07	21.08	17.81	-	-	24.80	10.45
Louisville	13.88	14.05	22.42	13.87	14.05	17.36	21.15	-	29.70	8.07
Memphis	10.32	10.44	16.95	10.32	10.24	11.71	-	21.82	21.69	3.91
Miami	21.75	19.87	23.58	21.75	19.73	23.41	-	28.90	32.77	-
Nashville	13.09	14.01	16.66	13.09	14.01	15.68	-	-	24.89	16.27
New Orleans	17.71	18.97	21.69	17.50	17.88	19.08	21.66	29.27	25.25	5.07
Tampa	13.45	9.79	23.92	13.45	9.79	23.58	-	-	29.37	-
Majors	8.42	11.29	15.83	8.32	10.58	13.73	17.68	28.47	25.16	6.45
Minors	11.66	8.47	7.72	11.67	8.45	7.47	9.33	14.06	13.01	5.08
WESTERN TRUNK LINE	13.35	11.51	16.67	13.25	10.19	13.27	10.79	25.69	24.69	4.40
Denver	13.61	13.53	20.37	13.30	13.53	12.85	19.97	-	28.61	8.24
Des Moines	13.56	23.27	30.06	13.41	28.89	23.19	30.40	-	43.34	5.36
Duluth	15.81	21.11	27.26	15.39	20.99	23.10	27.56	29.01	36.35	8.05
Kansas City	12.10	17.78	17.00	12.07	13.11	8.05	20.32	24.53	23.17	6.11
Minneapolis	14.70	15.47	24.71	14.10	14.21	15.73	25.97	31.62	33.29	6.53
Omaha	7.64	25.48	26.85	7.31	16.74	19.31	20.66	36.20	33.09	5.87
St. Paul	9.33	11.28	13.93	9.30	8.50	12.24	13.45	16.97	20.57	5.45
St. Louis	11.22	19.00	17.42	11.88	10.24	11.77	14.12	22.52	18.98	4.05
Wichita	8.81	9.41	14.32	8.81	9.41	13.00	-	-	19.71	4.28
Davenport	10.59	14.18	18.19	10.49	13.19	14.97	20.38	26.44	29.83	5.79
Majors	10.36	13.81	14.98	10.28	13.12	11.98	24.00	22.63	25.92	4.96
Minors	19.57	8.92	13.74	19.58	8.88	13.43	16.29	14.93	20.21	5.62
SOUTHWESTERN	10.51	8.54	12.04	10.49	9.33	10.23	13.80	17.55	20.07	4.93
Dallas	8.17	9.73	13.33	8.17	9.73	9.32	-	-	19.55	8.13
El Paso	5.42	3.56	9.86	5.35	3.55	8.15	8.79	-	12.04	1.88
Fort Worth	8.67	10.69	17.08	8.67	10.36	10.93	-	20.26	19.96	3.31
Houston	10.36	14.21	15.13	10.36	14.21	12.89	-	-	27.59	1.74
Little Rock	9.43	8.30	13.93	9.43	8.30	11.86	-	-	20.01	-
Oklahoma City	9.08	15.68	14.50	9.08	15.68	11.03	-	-	20.37	2.95
San Antonio	6.95	16.70	16.91	6.87	16.70	14.91	15.29	-	23.48	-
Tulsa	7.32	8.14	10.20	7.32	8.14	8.71	-	-	15.14	4.40
Majors	8.49	11.73	13.86	8.45	11.61	11.57	13.86	21.65	20.47	3.22
Minors	14.48	8.84	9.48	14.48	8.79	9.01	14.52	16.80	18.31	9.68
PACIFIC NORTHWEST	16.24	12.91	15.36	16.18	12.76	13.78	21.88	25.64	30.00	10.59
Portland	14.03	16.03	19.53	14.03	16.03	16.95	-	-	31.14	10.75
Seattle	20.29	16.34	18.77	20.24	16.34	15.28	25.53	-	27.50	-
Spokane	9.15	13.18	18.82	8.98	13.18	11.33	16.28	-	25.70	13.63
Tacoma	10.13	13.92	16.77	10.13	13.92	13.25	-	-	29.62	13.74
Majors	13.28	14.85	16.47	13.08	14.23	14.56	26.12	32.09	35.59	6.10
Minors	24.41	12.29	13.10	24.41	12.17	12.82	23.25	25.14	32.46	7.84
PACIFIC SOUTHWEST	19.83	10.72	15.22	19.83	10.51	12.95	20.42	28.18	33.83	22.15
Long Beach	24.77	3.05	13.13	24.77	3.05	8.46	-	-	23.34	-
Los Angeles	19.23	21.60	26.23	19.23	21.60	17.84	-	-	37.21	37.05
Salt Lake City	11.59	10.40	16.26	11.59	10.40	14.46	-	-	27.77	28.35
Oakland	23.25	17.11	22.01	23.26	17.04	19.46	20.04	48.30	31.27	14.18
San Diego	27.09	14.79	18.40	27.09	14.04	16.01	-	25.44	30.14	-
San Francisco	22.81	15.00	23.82	22.81	14.13	21.36	-	25.95	34.30	12.99
Majors	16.61	17.75	18.65	16.61	17.28	15.65	20.07	35.10	41.10	6.66
Minors	22.98	7.03	9.61	23.03	7.03	9.46	18.09	-	18.84	2.91

Analysis 106.8 Functional Distribution of Terminal Unit Costs Per Car - 1932

ALL AND LOCAL TRAFFIC

DISTRICT OR TERRITORY	ALL EXPENSES	ADMINISTRATION	TAXES	ROADWAY	POWER	CAR EXPENSE	ASSEMBLAGE	STATION	MARINE EXPENSES
ALL TERMINAL CARS									
United States	$11.76	$1.03	$1.12	$.41	$.55	$3.61	$2.89	$2.02	$.13
Eastern	12.00	1.05	1.14	.37	.64	3.51	3.12	1.98	.19
Southern	9.81	.91	.99	.37	.44	2.90	2.40	1.72	.08
Western	12.45	1.07	1.17	.48	.46	4.15	2.78	2.27	.07
New England	10.37	.89	.97	.48	.48	2.64	2.61	2.26	.04
Trunk Line	12.50	1.11	1.21	.30	.74	3.36	3.26	2.12	.40
Central	11.89	1.03	1.12	.41	.59	3.82	3.10	1.79	.03
Pocahontas	8.49	.82	.89	.29	.45	2.45	2.14	1.30	.15
Southeastern	10.46	.96	1.04	.41	.43	3.10	2.54	1.93	.05
Western Trunk Line	12.71	1.11	1.21	.50	.49	4.23	2.89	2.19	.09
Southwestern	10.14	.84	.92	.37	.35	3.61	2.04	2.00	.01
Pacific Northwest	14.40	1.25	1.35	.77	.50	4.66	3.31	2.55	.01
Pacific Southwest	14.80	1.27	1.37	.42	.52	4.65	3.50	2.95	.12
SINGLE CARRIER - HOUSE TRACK									
United States	$12.62	$1.11	$1.21	$.33	$.47	$1.55	$2.32	$5.43	$.20
Eastern	13.02	1.15	1.24	.32	.57	1.47	2.57	5.38	.32
Southern	10.27	.94	1.03	.28	.37	1.25	1.97	4.35	.07
Western	13.38	1.16	1.25	.38	.38	1.86	2.13	6.15	.07
New England	10.13	.87	.94	.37	.37	1.06	2.01	4.48	.03
Trunk Line	14.12	1.26	1.37	.23	.64	1.66	2.61	5.66	.69
Central	12.80	1.11	1.21	.41	.56	1.40	2.70	5.38	.03
Pocahontas	11.14	1.06	1.15	.24	.47	1.09	2.14	4.82	.17
Southeastern	10.02	.91	.99	.29	.34	1.29	1.93	4.22	.05
Western Trunk Line	13.25	1.17	1.26	.44	.43	1.79	2.33	5.75	.08
Southwestern	10.49	.87	.95	.26	.27	1.57	1.55	5.01	.01
Pacific Northwest	16.18	1.40	1.52	.52	.42	1.99	2.60	7.73	-
Pacific Southwest	19.83	1.70	1.84	.23	.34	3.02	2.25	10.26	.19
SINGLE CARRIER - TEAM TRACK									
United States	$10.63	$ .93	$1.01	$.40	$.47	$4.09	$2.48	$1.03	$.22
Eastern	11.57	1.02	1.10	.36	.62	4.31	2.99	.90	.27
Southern	8.57	.80	.86	.52	.38	3.18	2.09	.73	.02
Western	10.14	.87	.95	.42	.29	4.17	1.84	1.36	.24
New England	11.89	1.03	1.11	.58	.47	4.81	2.68	1.18	.03
Trunk Line	12.03	1.07	1.16	.28	.75	4.23	3.30	.72	.52
Central	10.82	.94	1.02	.39	.49	4.25	2.67	1.04	.02
Pocahontas	6.04	.59	.64	.27	.39	1.84	1.83	.42	.06
Southeastern	9.36	.86	.93	.60	.37	3.60	2.17	.82	.01
Western Trunk Line	10.19	.90	.97	.39	.30	3.84	1.83	1.48	.48
Southwestern	9.33	.78	.84	.43	.27	4.16	1.57	1.28	-
Pacific Northwest	12.76	1.10	1.20	.91	.43	4.59	2.86	1.67	-
Pacific Southwest	10.51	.90	.98	.23	.26	5.07	1.94	.96	.17
SINGLE CARRIER - INDUSTRY TRACK									
United States	$11.41	$1.01	$1.09	$.46	$.60	$4.24	$3.16	$.73	$.12
Eastern	11.65	1.02	1.10	.40	.69	4.17	3.39	.72	.16
Southern	9.29	.87	.95	.40	.46	3.42	2.47	.27	.10
Western	12.46	1.07	1.17	.61	.53	4.97	3.23	.83	.05
New England	10.25	.88	.95	.58	.57	3.26	3.08	.88	.05
Trunk Line	11.72	1.04	1.13	.34	.79	3.90	3.55	.69	.28
Central	11.88	1.03	1.12	.43	.61	4.67	3.26	.72	.04
Pocahontas	7.62	.74	.80	.31	.44	2.74	2.10	.35	.14
Southeastern	10.70	.98	1.06	.49	.48	4.00	2.79	.84	.06
Western Trunk Line	13.27	1.17	1.26	.66	.58	5.37	3.35	.80	.08
Southwestern	10.23	.85	.93	.46	.40	4.48	2.34	.76	.01
Pacific Northwest	13.78	1.19	1.29	.87	.52	5.40	3.50	.99	.02
Pacific Southwest	12.95	1.11	1.20	.55	.61	4.40	4.07	.93	.08

Analysis 106.9 Functional Distribution of Terminal Unit Costs Per Car - 1932

MULTIPLE CARRIER TRAFFIC

DISTRICT OR TERRITORY	ALL EX-PENSES	ADMIN-ISTRA-TION	TAXES	ROAD-WAY	POWER	CAR EX-PENSE	ASSEM-BLAGE	STA-TION	MARINE EXPENSES
CONNECTION DELIVERY									
United States	$12.04	$1.05	$1.14	$.28	$.42	$5.75	$2.58	$.82	$.03
Eastern	12.34	1.08	1.16	.29	.49	5.56	2.75	.98	.03
Southern	10.94	1.00	1.08	.27	.40	4.84	2.60	.70	.05
Western	12.07	1.03	1.12	.29	.34	6.25	2.35	.67	.02
New England	9.28	.79	.85	.26	.41	4.15	2.09	.67	.06
Trunk Line	11.93	1.05	1.14	.25	.59	5.07	2.90	.91	.02
Central	12.62	1.10	1.19	.31	.45	5.79	2.74	1.01	.03
Pocahontas	10.94	1.03	1.12	.25	.47	4.18	2.36	1.32	.21
Southeastern	10.95	.99	1.07	.28	.39	5.00	2.66	.55	.01
Western Trunk Line	12.37	1.07	1.16	.27	.34	6.54	2.42	.56	.01
Southwestern	9.43	.78	.85	.23	.20	4.62	1.73	.93	-
Pacific Northwest	14.53	1.25	1.36	.52	.33	7.18	2.99	.84	-
Pacific Southwest	14.84	1.27	1.38	.32	.40	7.51	2.96	.79	.21
MULTIPLE CARRIER - HOUSE TRACK									
United States	$18.17	$1.58	$1.72	$.65	$.98	$6.85	$5.35	$1.00	$.04
Eastern	18.29	1.60	1.72	.64	1.06	6.56	5.45	1.22	.04
Southern	16.70	1.52	1.65	.60	.87	6.13	5.13	.70	.10
Western	19.05	1.63	1.77	.81	.91	7.65	5.56	.70	.02
New England	13.91	1.19	1.28	.62	.82	5.15	4.10	.67	.08
Trunk Line	20.95	1.84	1.99	.55	1.41	6.76	6.18	2.17	.05
Central	17.91	1.56	1.69	.67	.97	6.63	5.33	1.03	.03
Pocahontas	18.13	1.69	1.84	.61	1.25	5.30	5.85	1.32	.27
Southeastern	16.35	1.48	1.60	.60	.79	6.33	4.95	.55	.05
Western Trunk Line	19.79	1.70	1.86	.85	.98	7.79	6.00	.60	.01
Southwestern	13.80	1.13	1.23	.48	.56	6.27	3.17	.93	.03
Pacific Northwest	21.88	1.91	2.09	.96	.85	9.41	5.82	.84	-
Pacific Southwest	20.42	1.79	1.95	.59	.63	9.79	4.67	.79	.21
MULTIPLE CARRIER - TEAM TRACK									
United States	$24.45	$2.14	$2.32	$.81	$1.20	$10.28	$6.70	$.87	$.13
Eastern	24.04	2.10	2.27	.73	1.47	9.21	7.07	1.06	.13
Southern	23.15	2.11	2.29	.79	1.18	9.06	6.59	.70	.43
Western	25.09	2.17	2.36	.90	.95	11.63	6.31	.70	.07
New England	19.27	1.63	1.76	.71	1.16	7.37	5.63	.67	.34
Trunk Line	25.67	2.27	2.47	.68	2.08	8.24	8.62	1.07	.24
Central	23.12	2.01	2.17	.76	1.11	9.78	6.20	1.04	.05
Pocahontas	20.40	1.92	2.08	.66	1.17	6.85	5.43	1.32	.97
Southeastern	25.74	2.31	2.51	.90	1.25	10.66	7.52	.55	.04
Western Trunk Line	25.69	2.23	2.43	.90	.97	11.96	6.54	.59	.07
Southwestern	17.55	1.45	1.57	.63	.57	9.04	3.31	.98	-
Pacific Northwest	25.64	2.22	2.41	1.37	.88	11.71	6.21	.84	-
Pacific Southwest	28.18	2.46	2.67	.68	1.04	13.71	6.62	.79	.21
MULTIPLE CARRIER - INDUSTRY TRACK									
United States	$23.91	$2.08	$2.27	$.80	$1.19	$9.90	$6.77	$.85	$.05
Eastern	23.54	2.06	2.22	.80	1.32	9.16	6.90	1.03	.05
Southern	22.93	2.09	2.27	.73	1.08	9.22	6.74	.70	.10
Western	24.68	2.12	2.30	.86	1.06	11.02	6.61	.68	.03
New England	19.93	1.70	1.83	.75	1.23	7.68	5.94	.67	.13
Trunk Line	25.45	2.25	2.45	.74	1.70	9.48	7.79	.95	.09
Central	23.39	2.04	2.21	.82	1.23	9.24	6.75	1.06	.04
Pocahontas	21.73	2.03	2.21	.56	1.12	8.50	5.62	1.32	.37
Southeastern	23.19	2.10	2.28	.77	1.08	9.39	6.99	.55	.03
Western Trunk Line	24.69	2.15	2.33	.88	1.06	11.02	6.66	.57	.02
Southwestern	20.07	1.67	1.81	.62	.89	9.11	5.04	.93	-
Pacific Northwest	30.00	2.59	2.82	1.51	1.25	12.58	8.40	.84	.01
Pacific Southwest	33.83	2.88	3.13	.77	1.38	15.28	9.39	.79	.21

Analysis 106.10 Distribution of Switch Engine Time Among Services - 1932

SEGREGATED METROPOLITAN DISTRICTS	WEIGHTED AVERAGE HOURS PER CAR									
	SINGLE CARRIER				MULTIPLE CARRIER				LINE SERVICE	
	HOUSE TRACK	TEAM TRACK	INDUS-TRY TRACK	ROAD HAUL CAR-RIER	HOUSE TRACK	TEAM TRACK	INDUS-TRY TRACK	INTER-MEDI-ATE	INTER-CHANGE	SINGLE CARRIER YARDING
SEGREGATED METROPOLITAN DISTRICTS *										
Boston	.21	.31	.37	.26	.27	.44	.59	-	.21	.07
Buffalo	.36	.49	.45	.27	.42	.55	.51	.32	.27	.16
New York	.31	.41	.42	.36	.38	-	.57	.33	.26	.34
Philadelphia	.30	.41	.59	.32	-	.60	.74	.47	.32	.25
Pittsburgh	.26	.36	.35	.31	-	-	.55	-	.34	.17
Washington	.31	.53	.53	-	.52	.80	.77	-	.27	.16
Chicago	.30	.39	.50	.35	.33	.40	.47	.24	.34	.21
Cincinnati	.30	.41	.51	.28	.38	.48	.55	.49	.25	.15
Cleveland	.33	.61	.66	.42	.39	-	.73	-	.42	.17
Detroit	.33	.45	.52	.31	-	-	.55	.35	.33	.24
Toledo	.40	.60	.37	.21	-	-	.52	.40	.21	.12
Atlanta	.38	.53	.67	.53	-	.31	.88	.63	.38	.24
Birmingham	.40	.48	.47	.35	.26	-	.57	-	.28	.15
Louisville	.62	.56	1.05	.41	.72	-	1.14	-	.41	.16
Memphis	.29	.29	.38	.23	-	-	.43	.23	.20	.10
New Orleans	.34	.45	.65	.27	.48	.46	.56	.21	.31	.23
Denver	.38	.33	.46	.34	.37	-	.59	.40	.32	.13
Kansas City	.39	.30	.38	.31	.43	.37	.45	.25	.30	.18
Minneapolis	.32	.38	.55	.29	-	-	.59	.33	.25	.17
Omaha	.22	.31	.51	.17	.25	.34	.51	.27	.18	.14
St. Paul	.30	.52	.53	.25	-	.53	.58	.24	.25	.16
St. Louis	.29	.37	.53	.21	.43	.56	.58	.28	.17	.28
Dallas	.23	.43	.54	.32	.27	.50	.74	.25	.29	.09
Fort Worth	.26	.27	.51	.21	-	.32	.57	.19	.21	.09
Houston	.41	.45	.50	.25	-	.39	.49	.09	.22	.10
Portland	.44	.36	.58	.37	-	-	.67	.18	.37	.17
Seattle	.41	.45	.51	.18	-	-	.55	-	.18	.16
Los Angeles	.32	.41	.61	.37	-	-	.77	.64	.35	.30
San Francisco	.36	.50	.82	.30	-	.53	.86	.32	.30	.08
OTHER METROPOLITAN DISTRICTS										
New England	.29	.30	.46	.38	.41	.39	.51	.19	.26	.12
Trunk Line	.37	.47	.61	.54	-	-	.79	-	.32	.19
Central	.27	.37	.43	.19	.29	.34	.41	.28	.19	.11
Pocahontas	.30	.34	.25	.28	.58	.46	.38	.45	.14	.07
Southeastern	.34	.47	.55	.22	.34	-	.51	-	.28	.11
Western Trunk Line	.32	.55	.42	.28	.28	.47	.43	.33	.25	.12
Southwestern	.22	.34	.46	.21	.36	-	.45	-	.22	.12
Pacific Northwest	.16	.33	.33	.28	-	-	.48	.67	.21	.09
Pacific Southwest	.30	.31	.61	.19	-	-	.72	-	.19	.16
MAJOR TERMINAL DISTRICTS										
New England	.23	.26	.36	.12	.26	-	.26	-	.13	.12
Trunk Line	.30	.41	.46	.18	-	-	.51	.32	.20	.07
Central	.26	.45	.46	.24	.32	.73	.54	.39	.25	.13
Pocahontas	.28	.37	.33	.25	-	-	.38	-	.24	.08
Southeastern	.20	.37	.42	.30	.23	.68	.43	.29	.19	.09
Western Trunk Line	.22	.29	.34	.25	.64	-	.44	.25	.26	.08
Southwestern	.23	.41	.38	.20	.23	.33	.41	.13	.18	.09
Pacific Northwest	.25	.32	.32	.18	-	-	.46	-	.16	.08
Pacific Southwest	.34	.35	.96	.32	.29	.46	1.10	.32	.30	.10
MINOR TERMINAL DISTRICTS										
New England	.15	.21	.20	-	-	-	-	-	.08	.02
Trunk Line	.13	.12	.14	.15	-	-	-	.18	.09	.07
Central	.17	.21	.26	-	-	-	.51	-	.16	.05
Pocahontas	.14	.18	.23	-	.18	-	.14	-	.05	.04
Southeastern	.11	.19	.15	-	-	-	-	-	.09	.08
Western Trunk Line	.21	.09	.23	-	-	-	-	-	.06	.06
Southwestern	.12	.14	.18	.20	-	-	.25	.17	.14	.08
Pacific Northwest	.10	.14	.15	-	-	-	.29	-	.15	.07
Pacific Southwest	.14	.10	.28	-	-	-	.22	-	.08	.09

* Districts at which terminal studies were individually applied.

Analysis 106.11 Distribution of Way Freight Train Hours Among Services - 1932

DISTRICT	PERCENT OF TOTAL TIME							TRAIN HOURS PER CAR			
		YARDS									
	ROAD	TOTAL	STATION	DELIVERY	INTERMEDIATE	INTERCHANGE	ROAD TRAIN	HOUSE TRACK	TEAM TRACK	INDUSTRY TRACK	CONNECTION
UNITED STATES	54%	46%	6%	31%	#	2%	6%	.13	.15	.19	.16
EASTERN DISTRICT	51%	49%	5%	30%	1%	4%	8%	.14	.15	.20	.16
SOUTHERN DISTRICT	55%	45%	8%	29%	-	1%	7%	.12	.19	.18	-
WESTERN DISTRICT	55%	45%	6%	32%	#	2%	5%	.14	.13	.20	.20
NEW ENGLAND	56%	44%	5%	34%	-	2%	2%	.14	.20	.22	-
TRUNK LINE	51%	49%	4%	25%	2%	2%	16%	.13	.11	.13	.15
CENTRAL FREIGHT ASSOCIATION	50%	50%	7%	34%	-	6%	3%	.17	.21	.26	-
SOUTHERN	55%	45%	8%	29%	-	1%	7%	.12	.19	.18	-
WESTERN TRUNK LINE	57%	43%	5%	29%	-	1%	8%	.21	.09	.23	-
SOUTHWESTERN	51%	49%	8%	35%	#	3%	3%	.12	.14	.19	.20
PACIFIC NORTHWEST	61%	39%	4%	29%	-	#	6%	.10	.14	.16	-
PACIFIC SOUTHWEST	48%	53%	4%	39%	-	6%	3%	.14	.10	.28	-

Less than 1/2%.

Analysis 106.12 Terminal Trucking Operations

EQUIPMENT	EXPENSE PER 8-HOUR DAY PER VEHICLE						
	VARIABLE EXPENSE			FIXED EXPENSE			TOTAL OPERATING EXPENSE
	VEHICLE	WAGES	TOTAL	VEHICLE	OVERHEAD	TOTAL	
7½ Ton Tractor, 5 Trailers	$ -	$ -	$ -	$ -	$ -	$ -	$ 42.60
7½ Ton Tractor, 5 Trailers	4.37	3.63	8.00	11.68	1.22	12.90	20.90
7½ Ton Tractor	5.03	6.52	11.55	4.15	4.29	8.44	19.99
5 Ton Tractor*	4.48	6.18	10.66	3.39	4.29	7.68	18.34
5 Ton Tractor*	3.19	4.56	7.75	3.91	3.26	7.17	14.92
3½ Ton Tractor, 2 Trailers	$ 5.56	$10.00	$15.56	$ 5.25	$ 5.30	$10.55	$ 26.11
3½ Ton Tractor, 5 Trailers	5.54	6.22	11.76	10.36	3.84	14.20	25.96
3½ Ton Tractor, 2 Trailers	2.85	10.00	12.85	4.02	5.36	9.38	22.23
3½ Ton Tractor, 5 Trailers	4.27	7.54	11.81	7.05	2.17	9.22	21.03
3 Ton Tractor*	2.11	5.76	7.87	2.65	4.29	6.94	14.81
2½ Ton Tractor*	$ -	$ -	$ -	$ -	$ -	$ -	$ 19.15
2½ Ton Tractor, 3 Trailers	6.32	6.05	12.37	3.46	2.44	5.90	18.27
2½ Ton Tractor*	-	-	-	-	-	-	15.36
2½ Ton Tractor, 2 Trailers	3.16	3.98	9.14	1.89	4.01	5.90	15.04
5-7½ Ton Trucks	$ 3.08	$ 6.81	$ 9.89	$ 7.09	$ 8.27	$15.36	$ 25.25
5-7½ Ton Trucks	2.56	9.88	12.44	2.08	7.61	9.69	22.13
5 Ton Trucks	5.34	6.51	8.85	2.02	6.16	8.18	17.03
5-7½ Ton Trucks	2.09	6.53	8.62	1.84	5.80	7.64	16.26
3 Ton Trucks	$ 2.83	$ 6.42	$ 9.25	$ 5.58	$ 6.62	$12.20	$ 21.45
3 Ton Trucks	3.02	11.21	14.23	3.83	2.73	6.56	20.79
2-3 Ton Trucks	2.96	7.84	10.90	2.81	5.78	8.59	19.39
3 Ton Trucks	2.02	5.98	8.00	1.01	2.21	3.22	11.22
1 Ton Trucks	$ 1.55	$ 6.78	$ 8.33	$ 7.45	$ 3.88	$11.33	$ 19.66
1½-2½ Ton Trucks	2.59	6.11	8.70	3.53	4.23	7.76	16.46
2 Ton Trucks	-	-	-	-	-	-	12.81
1½-2½ Ton Trucks	1.52	2.97	4.49	1.34	1.12	2.46	6.95

VEHICLE VARIABLE EXPENSE covers direct operating expense such as: gasoline; lubricants (oil, grease); tires; vehicle supplies; maintenance and repairs.
WAGES include salaries of drivers and helpers. In general each vehicle has only a driver.
VEHICLE FIXED EXPENSE includes; depreciation; insurance; licenses; taxes; and in some cases, interest on investment in vehicles.
OVERHEAD EXPENSE covers: garage rent; garage service (light, heat, power, etc.); maintenance overhead; office rent, services and supplies; administration; clerical; miscellaneous.
*Trailer expense not available and not included.

TYPE OF EQUIPMENT	PERFORMANCE PER 8-HOUR DAY PER VEHICLE							
	MILES	COST PER MILE CENTS	NUMBER OF ONE-WAY TRIPS PER 8-HOUR DAY				RATIO OF LOADED TRIPS TO TOTAL TRIPS	RATIO OF LOADED MILES TO TOTAL MILES
			LOADED	EMPTY	CHASSIS	TOTAL		
Tractor Semitrailers, shuttle	29.21	45.2	11.43	4.51	3.28	19.22	59.5	-
Truck, Containers, shuttle	40.00	68.0	10.78	5.85	2.93	19.57	55.1	64.7
Tractor Semitrailers, shuttle	63.07	44.2	8.36	4.66	7.40	20.41	40.9	46.0
Tractor Semitrailers, shuttle	29.42	51.0	7.41	1.22	4.29	12.92	57.3	65.3
Tractor Semitrailers, shuttle	17.61	242.0	5.68	2.76	-	8.44	67.3	67.2
Tractor Semitrailers, shuttle	21.94	96.0	5.34	-	-	-	-	-
Tractor Semitrailers, shuttle	21.01	78.7	4.73	2.73	4.62	12.09	39.1	53.8
Tractor Semitrailers, shuttle	19.75	72.5	4.23	3.09	1.68	9.00	47.1	42.2
Tractor Semitrailers, shuttle	21.93	95.2	3.62	2.97	3.97	10.55	34.3	37.3
Tractor and 1 semitrailer	20.60	62.0	3.50	2.75	1.00	7.25	48.3	53.3
Truck	19.13	59.1	3.52	1.97	-	5.39	65.6	77.4

"CHASSIS" trips refer to tractor moving without semitrailer or truck moving without container.
"SHUTTLE" movement refers to tractors hauling one semitrailer to destination, uncoupling, and picking up another semitrailer, not waiting for the first one to be unloaded. A truck hauling demountable bodies performs a similar function.

Analysis 106.13 Scale of Terminal and Distribution Costs of Handling Freight Traffic in Containers

LENGTH OF HAUL		TRUCK MILES		TRIPS PER	TRUCK COST	
LOADED	TOTAL	PER HOUR	PER 8-HOUR DAY	DAY	PER DAY	PER CONTAINER
1-1/2	2-1/2	4-1/2	35	14	$ 19.20	$ 1.37
2 - 3	4	5	40	10	19.80	1.98
3 - 4	6	6	50	8	21.00	2.63
4 - 6	8-1/2	7-1/2	60	7	22.20	3.17
6 - 10	13	10	80	6	24.60	4.10
10 - 14	20	12-1/2	100	5	27.00	5.40
15 - 20	30	15	120	4	29.40	7.35
21 - 27	40	15	120	3	29.40	9.80
27 - 33	50	17	150	3	34.00	11.33

Truck cost - $15.00 per day fixed cost plus 12¢ per mile
* One hour overtime @ $1.00 allowed

ESTIMATED TRACTOR-SEMITRAILER OPERATING COSTS IN CONTAINER MOVEMENT

	AVERAGE COST, DOLLARS PER DAY (306 DAYS PER YEAR)ø							
MILES PER 8-HOUR DAY	30	40	50	60	80	100	120	150
VARIABLE COSTS								
Fuel, less tax	$ .93	$ 1.24	$ 1.55	$ 1.86	$ 2.48	$ 3.10	$3.72	$4.65
Oil, less tax	.09	.12	.15	.18	.24	.30	.36	.45
Tires, including repairs	.88	1.17	1.46	1.75	2.34	2.92	3.51	4.39
Garage Miscellaneous	.22	.29	.36	.43	.58	.72	.87	1.08
Maintenance	.94	1.26	1.57	1.88	2.51	3.14	3.77	4.71
Variable Fees, including fuel & oil tax.	.83	1.10	1.38	1.65	2.20	2.75	3.30	4.13
Total Variable Costs	$3.88	$ 5.18	$ 6.47	$ 7.76	$10.35	$ 12.94	$15.53	$19.41
FIXED COSTSøø								
Vehicle depreciation	$2.24	$ 2.24	$ 2.24	$ 2.24	$ 2.24	$ 2.24	$2.24	$2.24
Vehicle Insurance	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Driver's Wages	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01
Garage Rent	.54	.54	.54	.54	.54	.54	.54	.54
General Overhead and Miscellaneous	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90
Licenses and Taxes, fixed	.82	.82	.82	.82	.82	.82	.82	.82
TOTAL FIXED COSTS	$14.57	$14.57	$14.57	$14.57	$14.57	$14.57	$14.57	$14.57
TOTAL OPERATING COSTS	$18.45	$19.75	$21.04	$22.33	$24.92	$27.51	$30.10	$33.98

ø For maximum or minimum normal deviation apply ± 22.5% to total variable costs and 19.5% to total fixed costs.

øø Interest on investment in vehicles not included in above costs.

Analysis 107.1 Carrier Line Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE			
										GROSS	NET RAIL	NET WATER	EQUATED
RAIL													
Line - Total	$1,237,467	49%	$5,096	$ 232	$45.58	$1.92	$50.70	$3.16	$.1198	$.0017	$.0053	-	$.0027
Station	50,852	2	209	10	1.87	.08	2.08	.13	.0049	.0001	.0002	-	.0001
Conveyance	876,664	35	3,610	164	32.29	1.36	35.92	2.24	.0849	.0012	.0037	-	.0019
Yardings	309,950	13	1,277	58	11.42	.48	12.70	.79	.0300	.0004	.0013	-	.0007
Single Carrier	165,664	7	683	31	6.10	.26	6.79	.42	.0160	.0002	.0007	-	.0004
Multiple Carrier	144,286	6	594	27	5.32	.22	5.91	.37	.0140	.0002	.0006	-	.0003
WATER													
CARLOT													
Line - Total	$ 83,302	81%	$ 487	$ 765	-	$4.44	$29.63	$4.02	-	-	$.0046	$.0025	-
Station	2,383	2	14	22	-	.13	.85	.12	-	-	.0001	.0001	-
Conveyance	80,920	79	473	743	-	4.31	28.79	3.91	-	-	.0045	.0025	-
CARGO													
Line - Total	$ 19,850	116%	$ 214	$5,023	-	$ .70	$27.60	$4.44	-	-	$.0010	$.0010	-
Station	133	1	1	34	-	.00	.18	.03	-	-	.0000	.0000	-
Conveyance	19,716	115	212	4,989	-	.69	27.42	4.41	-	-	.0010	.0010	-
PIPE													
Line - Total	$ 67,186	32%	$ 724	-	-	$ .81	-	-	-	-	$.0021#	-	-
Station	-	-	-	-	-	-	-	-	-	-	-	-	-
Conveyance	67,186	32	724	-	-	.81	-	-	-	-	.0021#	-	-

# Pipe distance.

SECTION 107. LINE COSTS

Analysis 107.2 Rail Line Unit Costs - 1932

	AGGREGATE (000)	PER CENT OF TOTAL COST	PER ROUTE MILE	PER SCHEDULE	PER SCHEDULE HOUR	PER SCHEDULE MILE	PER VEHICLE ORIG. OR EQUATED	PER VEHICLE MILE	PER NET TON	PER NET TON MILE	PER EQUATED TON MILE	PER GROSS TON MILE
LINE - TOTAL	$		$	$	$	$	$	$	$	$	$	$
United States	1,237,467	63%	5,096	232.04	50.70	3.16	45.58	.1198	1.92	.00525	.00272	.00166
New England	48,221	61	6,317	194.36	56.59	3.90	29.90	.1394	1.87	.00799	.00413	.00226
Trunk Line	265,524	62	12,310	210.28	62.71	4.50	43.52	.1412	1.62	.00521	.00285	.00190
Central	278,652	60	7,264	262.59	53.79	3.23	40.71	.1133	1.61	.00471	.00244	.00153
Pocahontas	62,954	67	8,128	213.26	48.33	3.70	37.48	.1127	.91	.00296	.00153	.00126
Southeastern	139,548	65	4,004	220.08	45.05	2.60	47.36	.1213	2.22	.00536	.00277	.00170
Western Trunk Line	203,745	61	3,442	220.99	43.96	2.63	42.59	.1127	2.20	.00581	.00300	.00163
Southwestern	103,317	67	2,897	221.46	43.46	2.50	49.17	.1145	2.40	.00583	.00302	.00161
Pacific Northwest	58,714	70	2,962	292.76	48.77	3.03	80.86	.1109	3.52	.00569	.00294	.00158
Pacific Southwest	76,790	69	4,272	316.39	50.40	3.11	73.02	.1101	4.35	.00654	.00339	.00171
STATION	$		$	$	$	$	$	$	$	$	$	$
United States	50,852	3%	209	9.54	2.08	.13	1.87	.0049	.08	.00022	.00011	.00007
New England	2,555	3	335	10.30	3.00	.21	1.58	.0074	.10	.00042	.00022	.00012
Trunk Line	11,887	3	551	9.41	2.81	.20	1.95	.0063	.07	.00025	.00013	.00009
Central	11,969	3	312	11.28	2.31	.14	1.75	.0049	.07	.00020	.00010	.00007
Pocahontas	1,532	2	198	5.19	1.18	.09	.91	.0027	.02	.00007	.00004	.00003
Southeastern	6,513	3	187	10.27	2.10	.12	2.21	.0057	.10	.00025	.00013	.00008
Western Trunk Line	7,890	2	133	8.56	1.70	.10	1.65	.0044	.09	.00022	.00012	.00006
Southwestern	5,064	3	142	10.85	2.13	.12	2.41	.0056	.12	.00029	.00015	.00008
Pacific Northwest	1,438	2	73	7.17	1.19	.07	1.98	.0027	.09	.00014	.00007	.00004
Pacific Southwest	2,004	2	111	8.26	1.32	.08	1.91	.0029	.11	.00017	.00009	.00004
CONVEYANCE	$		$	$	$	$	$	$	$	$	$	$
United States	876,664	45%	3,610	164.38	35.92	2.24	32.29	.0849	1.36	.00372	.00193	.00118
New England	35,726	45	4,680	143.99	41.93	2.89	22.16	.1033	1.38	.00592	.00306	.00167
Trunk Line	167,737	39	7,776	132.85	39.61	2.85	27.49	.0892	1.03	.00348	.00180	.00120
Central	183,929	40	4,795	173.33	35.51	2.13	26.87	.0748	1.06	.00311	.00161	.00101
Pocahontas	47,196	51	6,093	159.88	36.23	2.77	28.10	.0845	.69	.00222	.00115	.00094
Southeastern	103,927	49	2,981	163.90	33.55	1.94	35.28	.0903	1.65	.00399	.00207	.00127
Western Trunk Line	150,262	45	2,538	162.97	32.43	1.94	31.41	.0831	1.62	.00429	.00221	.00120
Southwestern	78,985	51	2,215	169.31	33.22	1.91	37.59	.0875	1.83	.00445	.00230	.00123
Pacific Northwest	48,125	58	2,427	239.96	39.98	2.49	66.27	.0909	2.89	.00466	.00241	.00129
Pacific Southwest	60,777	54	3,381	250.41	39.88	2.46	57.79	.0871	3.44	.00518	.00268	.00135
SINGLE CARRIER YARDINGS	$		$	$	$	$	$	$	$	$	$	$
United States	165,664	8%	683	31.06	6.79	.42	6.10	.0160	.26	.00070	.00036	.00022
New England	5,847	7	766	23.57	6.86	.47	3.62	.0169	.23	.00097	.00050	.00028
Trunk Line	43,253	10	2,005	34.25	10.22	.73	7.09	.0230	.26	.00090	.00046	.00031
Central	38,660	8	1,008	36.43	7.46	.45	5.65	.0157	.23	.00065	.00034	.00021
Pocahontas	9,194	10	1,187	31.14	7.06	.54	5.47	.0165	.13	.00043	.00022	.00018
Southeastern	17,339	8	498	27.35	5.60	.32	5.88	.0151	.28	.00067	.00034	.00021
Western Trunk Line	26,107	8	442	28.32	5.63	.34	5.46	.0144	.28	.00074	.00038	.00021
Southwestern	11,164	7	313	23.93	4.70	.27	5.31	.0124	.26	.00063	.00033	.00017
Pacific Northwest	6,576	8	332	32.79	5.46	.34	9.06	.0124	.39	.00064	.00033	.00018
Pacific Southwest	7,524	7	419	31.00	4.94	.30	7.15	.0108	.43	.00064	.00033	.00017
MULTIPLE CARRIER YARDINGS	$		$	$	$	$	$	$	$	$	$	$
United States	144,286	7%	594	27.06	5.91	.37	5.32	.0140	.22	.00061	.00032	.00019
New England	4,093	5	536	16.50	4.80	.33	2.54	.0118	.16	.00068	.00035	.00019
Trunk Line	42,647	10	1,978	33.77	10.07	.72	6.99	.0227	.26	.00088	.00046	.00030
Central	44,094	9	1,149	41.55	8.51	.51	6.44	.0179	.25	.00075	.00039	.00024
Pocahontas	5,032	5	650	17.05	3.86	.30	3.00	.0090	.07	.00024	.00012	.00011
Southeastern	11,769	6	338	18.56	3.80	.22	3.99	.0102	.19	.00045	.00023	.00014
Western Trunk Line	19,487	6	329	21.14	4.20	.25	4.07	.0108	.21	.00056	.00029	.00016
Southwestern	8,104	5	227	17.37	3.41	.20	3.86	.0090	.19	.00046	.00024	.00013
Pacific Northwest	2,575	3	130	12.84	2.14	.13	3.55	.0049	.15	.00025	.00013	.00007
Pacific Southwest	6,485	6	361	26.72	4.26	.26	6.17	.0093	.37	.00055	.00029	.00015

SECTION 107. LINE COSTS

Analysis 107.3 Water Line Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	SCHEDULE	VEHICLE	NET TON	SCHEDULE HOUR	SCHEDULE MILE	VEHICLE MILE	PER TON MILE			
										GROSS	NET		EQUATED
											RAIL	WATER	
CARLOT													
LINE													
United States	$ 83,302	81%	$ 487	$ 765	-	$4.44	$29.63	$ 4.02	-	-	$.0046	$.0025	-
Atlantic Coast	15,708	63	702	1,101	-	3.36	21.97	2.76	-	-	.0089	.0079	-
Atlantic Gulf	11,832	89	453	10,361	-	5.18	41.79	4.17	-	-	.0044	.0035	-
Intercoastal	34,029	87	386	78,408	-	8.69	42.35	5.76	-	-	.0034	.0015	-
Inland Waterways	5,159	60	544	7,631	-	2.25	23.24	6.09	-	-	.0035	.0022	-
Great Lakes	6,675	90	610	529	-	2.23	28.34	3.55	-	-	.0058	.0052	-
Pacific Coast	9,898	105	702	124	-	3.82	17.93	2.81	-	-	.0096	.0103	-
STATION													
United States	$ 2,383	2%	$ 14	$ 22	-	$ .13	$ .85	$ .12	-	-	$.0001	$.0001	-
Atlantic Coast	351	1	16	25	-	.08	.49	.06	-	-	.0002	.0002	-
Atlantic Gulf	1,002	8	38	877	-	.44	3.54	.35	-	-	.0004	.0003	-
Intercoastal.	462	1	5	1,066	-	.12	.58	.08	-	-	.0000	.0001	-
Inland Waterways	223	3	23	329	-	.10	1.00	.26	-	-	.0002	.0001	-
Great Lakes	143	2	13	11	-	.05	.61	.08	-	-	.0001	.0001	-
Pacific Coast	202	2	14	3	-	.08	.37	.06	-	-	.0002	.0002	-
CONVEYANCE													
United States	$ 80,920	79%	$ 473	$ 743	-	$4.31	$28.79	$ 3.91	-	-	$.0045	$.0025	-
Atlantic Coast	15,357	62	686	1,077	-	3.28	21.47	2.70	-	-	.0087	.0077	-
Atlantic Gulf	10,831	81	414	9,484	-	4.74	38.25	3.82	-	-	.0040	.0032	-
Intercoastal	33,567	86	381	77,342	-	8.57	41.78	5.68	-	-	.0034	.0015	-
Inland Waterways	4,936	58	520	7,302	-	2.15	22.24	5.83	-	-	.0033	.0021	-
Great Lakes	6,532	88	597	517	-	2.18	27.74	3.47	-	-	.0057	.0051	-
Pacific Coast	9,697	103	688	122	-	3.74	17.57	2.76	-	-	.0094	.0101	-
CARGO													
LINE													
United States	$ 19,850	116%	$ 214	$5,023	-	$ .70	$27.60	$ 4.44	-	-	$.0010	$.0010	-
Atlantic Coast	3,885	119	210	7,500	-	1.15	42.88	7.09	-	-	.0018	.0018	-
Atlantic Gulf	989	81	108	26,021	-	1.90	31.31	6.14	-	-	.0011	.0010	-
Intercoastal	233	127	38	14,552	-	4.82	6.74	1.21	-	-	.0017	.0008	-
Inland Waterways	446	44	108	1,937	-	.76	6.57	1.81	-	-	.0013	.0007	-
Great Lakes	13,639	123	276	6,257	-	.57	37.85	4.74	-	-	.0009	.0009	-
Pacific Coast	658	174	118	679	-	4.07	4.91	1.49	-	-	.0099	.0099	-
STATION													
United States	$ 133	1%	$ 1	$ 34	-	$ .00	$ .18	$ .03	-	-	$.0000	$.0000	-
Atlantic Coast	80	2	4	155	-	.02	.88	.15	-	-	.0000	.0000	-
Atlantic Gulf	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
Intercoastal	26	14	4	1,602	-	.53	.75	.13	-	-	.0002	.0001	-
Inland Waterways	1	0	0	3	-	.00	.01	.00	-	-	.0000	.0000	-
Great Lakes	26	0	1	12	-	.00	.07	.01	-	-	.0000	.0000	-
Pacific Coast	0	0	0	0	-	.00	.00	.00	-	-	.0000	.0000	-
CONVEYANCE													
United States	$ 19,716	115%	$ 212	$4,989	-	$ .69	$27.42	$ 4.41	-	-	$.0010	$.0010	-
Atlantic Coast	3,805	116	206	7,345	-	1.13	42.00	6.95	-	-	.0018	.0017	-
Atlantic Gulf	989	81	108	26,021	-	1.90	31.31	6.14	-	-	.0011	.0010	-
Intercoastal	207	113	34	12,950	-	4.29	5.99	1.07	-	-	.0015	.0007	-
Inland Waterways	445	44	108	1,934	-	.76	6.56	1.81	-	-	.0013	.0007	-
Great Lakes	13,613	123	275	6,245	-	.57	37.78	4.73	-	-	.0009	.0009	-
Pacific Coast	658	174	118	678	-	4.07	4.91	1.49	-	-	.0099	.0099	-

Analysis 107.4 Pipe Line Unit Costs - 1932

	AGGREGATE (000)	REVENUE RATIO	ROUTE MILE	NET TON	NET TON MILE
CONVEYANCE					
United States	$ 67,186	32 %	$ 724	$ .81	$ .0021
North Atlantic Coast	3,735	40	254	1.32	.0035
Great Lakes Southwest	33,482	33	748	1.33	.0016
Southwest Gulf	29,968	29	901	.55	.0032

Analysis 107.5 Fixed and Variable Line Costs of Car Lot Trains - 1932

TYPE OF TRAIN ITEM	COST PER CAR MILE, CENTS					COST PER NET TON MILE, MILLS				
	ALL	MANIFEST	DRAG	WAY	BRANCH	ALL	MANIFEST	DRAG	WAY	BRANCH
LINE COSTS	11.68	9.07	12.72	20.24	26.56	5.0	4.6	4.6	8.2	10.7
FIXED EXPENSE	4.70	3.42	5.45	8.60	10.92	2.0	1.9	1.9	3.6	4.4
Road	4.70	3.42	5.45	8.60	10.92	2.0	1.9	1.9	3.6	4.4
Overhead	1.70	1.19	1.90	3.38	4.62	.7	.6	.6	1.3	1.9
Roadway	1.80	1.42	2.32	2.63	2.61	.8	.8	.8	1.1	1.0
Cars	.28	.23	.29	.45	.48	.1	.1	.1	.3	.2
Dispatching, etc	.28	.17	.28	.71	1.12	.1	.1	.1	.3	.4
Train Supplies	.03	.02	.03	.04	.05	-	-	-	-	-
Station	.17	.10	.16	.44	.66	.1	.1	.1	.2	.3
Supervision	.44	.29	.47	.95	1.38	.2	.2	.2	.4	.6
Power	.14	.11	.18	.20	.20	.1	.1	.1	.1	.1
Transportation	.30	.18	.29	.75	1.18	.1	.1	.1	.3	.5
VARIABLE EXPENSE	6.98	5.65	7.27	11.64	15.64	3.0	2.7	2.7	4.6	6.3
Road	3.98	2.65	4.27	8.64	12.64	1.7	1.4	1.4	3.3	5.0
Power	2.51	1.77	2.82	4.91	6.74	1.1	.9	.9	1.8	2.7
Maintenance	1.27	1.02	1.60	1.77	1.78	.5	.5	.5	.6	.7
Fuel and Care	1.24	.75	1.22	3.14	4.96	.6	.4	.4	1.2	2.0
Wages (crew)	1.47	.88	1.45	3.73	5.90	.6	.5	.5	1.5	2.3
Yardings	3.00	3.00	3.00	3.00	3.00	1.3	1.3	1.3	1.3	1.3

Analysis 107.6 Functional Distribution of Road Service Unit Cost Per Net Ton Mile - 1932

	ALL EXPENSES AND TAXES	ADMINIS- TRATION	TAXES	ROADWAY	POWER	CAR	TRAIN	STATION
ALL TRAINS								
United States	$.0038	$.0004	$.0004	$.0008	$.0006	$.0001	$.0015	$.0001
New England	.0061	.0006	.0006	.0014	.0009	.0001	.0024	.0002
Trunk Line	.0036	.0003	.0004	.0006	.0006	.0001	.0014	.0001
Central	.0032	.0003	.0003	.0007	.0005	.0001	.0012	.0001
Pocahontas	.0022	.0002	.0002	.0005	.0004	.0001	.0008	*
Southeastern	.0041	.0004	.0004	.0010	.0007	.0001	.0015	.0001
Western Trunk Line	.0044	.0004	.0004	.0009	.0007	.0001	.0017	.0001
Southwestern	.0046	.0004	.0005	.0011	*	.0002	.0017	.0001
Pacific Northwest	.0047	.0004	.0005	.0010	.0008	.0001	.0018	.0001
Pacific Southwest	.0053	.0005	.0005	.0010	.0008	.0002	.0022	.0001
TOTAL - MAIN								
United States	$.0036	$.0003	$.0004	$.0008	$.0006	$.0001	$.0013	$.0001
New England	.0056	.0005	.0006	.0014	.0009	.0001	.0020	.0001
Trunk Line	.0034	.0003	.0003	.0006	.0006	.0001	.0013	.0001
Central	.0031	.0003	.0003	.0007	.0005	.0001	.0012	.0001
Pocahontas	.0023	.0002	.0002	.0005	.0004	.0001	.0007	*
Southeastern	.0039	.0004	.0004	.0010	.0007	.0001	.0013	.0001
Western Trunk Line	.0041	.0004	.0004	.0009	.0007	.0001	.0015	.0001
Southwestern	.0043	.0004	.0004	.0011	.0007	.0002	.0015	.0001
Pacific Northwest	.0043	.0004	.0004	.0010	.0008	.0001	.0015	.0001
Pacific Southwest	.0050	.0005	.0005	.0010	.0008	.0002	.0019	.0001
TOTAL - THROUGH ∅								
United States	$.0033	$.0004	$.0005	$.0009	$.0004	$.0001	$.0009	$.0001
New England	.0048	.0004	.0004	.0013	.0009	.0001	.0016	.0001
Trunk Line	.0032	.0003	.0003	.0006	.0006	.0002	.0011	.0001
Central	.0029	.0003	.0003	.0007	.0005	.0002	.0008	.0001
Pocahontas	.0021	.0002	.0003	.0005	.0004	.0001	.0006	-
Southeastern	.0034	.0003	.0003	.0009	.0007	.0001	.0010	.0001
Western Trunk Line	.0036	.0003	.0004	.0009	.0006	.0001	.0012	.0001
Southwestern	.0038	.0004	.0004	.0010	.0006	.0001	.0012	.0001
Pacific Northwest	.0042	.0003	.0006	.0010	.0008	.0001	.0013	.0001
Pacific Southwest	.0046	.0004	.0006	.0009	.0008	.0002	.0016	.0001
MAIN LINE WAY								
United States	$.0069	$.0006	$.0007	$.0011	$.0008	$.0002	$.0034	$.0002
New England	.0125	.0012	.0013	.0018	.0011	.0002	.0065	.0004
Trunk Line	.0057	.0005	.0006	.0003	.0008	.0001	.0011	.0001
Central	.0058	.0005	.0006	.0008	.0006	.0002	.0030	.0001
Pocahontas	.0051	.0005	.0005	.0008	.0006	.0001	.0026	.0001
Southeastern	.0074	.0007	.0008	.0013	.0008	.0002	.0034	.0002
Western Trunk Line	.0083	.0008	.0008	.0014	.0010	.0002	.0039	.0002
Southwestern	.0082	.0008	.0008	.0016	.0009	.0001	.0011	.0001
Pacific Northwest	.0074	.0007	.0008	.0013	.0008	.0002	.0035	.0001
Pacific Southwest	.0100	.0009	.0010	.0014	.0010	.0003	.0051	.0002
BRANCH WAY								
United States	$.0094	$.0009	$.0010	$.0010	$.0008	$.0002	$.0052	$.0003
New England	.0197	.0019	.0020	.0018	.0010	.0002	.0121	.0007
Trunk Line	.0076	.0007	.0008	.0006	.0007	.0001	.0044	.0002
Central	.0075	.0007	.0008	.0007	.0006	.0002	.0043	.0002
Pocahontas	.0064	.0006	.0007	.0007	.0005	.0001	.0037	.0001
Southeastern	.0036	.0003	.0004	.0005	.0003	.0001	.0019	.0001
Western Trunk Line	.0102	.0010	.0010	.0012	.0009	.0002	.0055	.0003
Southwestern	.0094	.0009	.0010	.0012	.0008	.0002	.0049	.0003
Pacific Northwest	.0117	.0011	.0012	.0015	.0009	.0002	.0066	.0003
Pacific Southwest	.0141	.0013	.0014	.0011	.0011	.0006	.0082	.0003

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* Less than .00005.

∅ Manifest and Drag.

Analysis 107.7 Functional Distribution of Unit Cost of Road Service per Loaded Car Miles - 1932

	ALL EXPENSES AND TAXES	ADMINIS- TRATION	TAXES	ROADWAY	POWER	CAR	TRAIN	STATION
ALL TRAINS								
United States	$.0869	$.0082	$.0089	$.0182	$.0141	$.0028	$.0332	$.0012
New England	.1067	.0100	.0109	.0242	.0154	.0023	.0411	.0028
Trunk Line	.0917	.0086	.0094	.0159	.0165	.0025	.0368	.0020
Central	.0765	.0072	.0078	.0159	.0123	.0030	.0289	.0014
Pocahontas	.0856	.0081	.0088	.0195	.0162	.0023	.0298	.0009
Southeastern	.0925	.0087	.0095	.0220	.0149	.0023	.0334	.0017
Western Trunk Line	.0851	.0080	.0087	.0183	.0129	.0029	.0329	.0016
Southwestern	.0904	.0085	.0092	.0211	.0134	.0032	.0328	.0023
Pacific Northwest	.0926	.0087	.0094	.0201	.0150	.0027	.0354	.0013
Pacific Southwest	.0888	.0083	.0090	.0165	.0141	.0033	.0362	.0013
TOTAL - MAIN LINE								
United States	$.0817	$.0077	$.0083	$.0179	$.0139	$.0027	$.0297	$.0015
New England	.0979	.0092	.0100	.0239	.0153	.0022	.0348	.0024
Trunk Line	.0855	.0080	.0087	.0157	.0162	.0024	.0326	.0018
Central	.0747	.0070	.0076	.0159	.0123	.0030	.0277	.0013
Pocahontas	.0794	.0075	.0081	.0191	.0161	.0023	.0255	.0008
Southeastern	.0872	.0082	.0089	.0216	.0147	.0023	.0300	.0016
Western Trunk Line	.0792	.0074	.0080	.0179	.0126	.0028	.0289	.0014
Southwestern	.0837	.0078	.0085	.0207	.0132	.0030	.0284	.0020
Pacific Northwest	.0830	.0078	.0084	.0193	.0142	.0026	.0292	.0010
Pacific Southwest	.0838	.0079	.0085	.0164	.0140	.0031	.0327	.0012
TOTAL - MANIFEST AND DRAG								
United States	$.0737	$.0068	$.0082	$.0170	$.0133	$.0032	$.0240	$.0012
New England	.0837	.0067	.0073	.0231	.0149	.0022	.0275	.0020
Trunk Line	.0773	.0067	.0076	.0152	.0155	.0042	.0266	.0015
Central	.0688	.0063	.0076	.0154	.0119	.0037	.0228	.0011
Pocahontas	.0764	.0069	.0115	.0185	.0157	.0021	.0210	.0007
Southeastern	.0774	.0077	.0078	.0205	.0140	.0029	.0234	.0011
Western Trunk Line	.0697	.0062	.0077	.0168	.0118	.0027	.0234	.0011
Southwestern	.0742	.0082	.0083	.0190	.0124	.0028	.0219	.0016
Pacific Northwest	.0774	.0069	.0105	.0180	.0142	.0028	.0242	.0008
Pacific Southwest	.0760	.0069	.0099	.0152	.0135	.0028	.0267	.0010
MAIN LINE WAY								
United States	$.1725	$.0162	$.0176	$.0263	$.0197	$.0045	$.0837	$.0044
New England	.2210	.0209	.0226	.0325	.0199	.0030	.1146	.0076
Trunk Line	.1601	.0151	.0163	.0194	.0213	.0040	.0795	.0045
Central	.1574	.0148	.0160	.0206	.0167	.0049	.0807	.0037
Pocahontas	.1871	.0177	.0192	.0273	.0229	.0040	.0932	.0029
Southeastern	.1721	.0162	.0176	.0300	.0195	.0038	.0802	.0047
Western Trunk Line	.1782	.0167	.0182	.0302	.0207	.0044	.0834	.0046
Southwestern	.1735	.0162	.0176	.0335	.0191	.0052	.0766	.0053
Pacific Northwest	.1776	.0167	.0181	.0321	.0199	.0045	.0831	.0032
Pacific Southwest	.2358	.0221	.0239	.0339	.0227	.0077	.1207	.0048
BRANCH LINE WAY								
United States	$.2356	$.0222	$.0241	$.0261	$.0198	$.0048	$.1321	$.0066
New England	.3499	.0331	.0359	.0328	.0176	.0035	.2150	.0120
Trunk Line	.2702	.0255	.0277	.0220	.0266	.0043	.1559	.0082
Central	.2273	.0214	.0232	.0215	.0172	.0058	.1324	.0058
Pocahontas	.2883	.0274	.0298	.0332	.0212	.0048	.1678	.0042
Southeastern	.2447	.0230	.0250	.0345	.0209	.0041	.1300	.0072
Western Trunk Line	.1969	.0186	.0201	.0241	.0173	.0040	.1074	.0054
Southwestern	.2009	.0189	.0205	.0265	.0174	.0051	.1055	.0070
Pacific Northwest	.2787	.0263	.0285	.0359	.0207	.0040	.1573	.0061
Pacific Southwest	.2220	.0207	.0225	.0176	.0170	.0091	.1300	.0051

Analysis 108.1 Rail Freight Train Performance

	UNITS PER TRAIN HOURS						UNITS PER TRAIN MILE				
			TON MILES					TON MILES			
	TRAIN MILES	LOADED CAR MILES	NET	EQUAT-ED	CAR	GROSS	LOADED CAR MILES	NET	EQUAT-ED	CAR	GROSS
UNITED STATES	16	423	97	188	266	308	26	605	1,166	17	19
NEW ENGLAND	15	406	71	137	214	251	28	488	944	15	17
Connecticut	16	537	92	178	280	327	34	584	1,130	18	21
Maine	15	327	62	120	185	217	22	414	801	12	14
Massachusetts	14	367	64	124	195	229	27	470	909	14	17
New Hampshire	14	433	80	155	230	266	32	585	1,132	17	20
Rhode Island	16	544	88	170	287	334	35	563	1,089	18	21
Vermont	13	366	54	104	162	193	28	413	799	12	15
TRUNK LINE	14	444	114	221	289	330	32	817	1,580	20	24
Delaware	13	321	58	112	190	215	25	452	874	15	17
Maryland	13	405	105	203	263	303	31	810	1,567	20	23
New Jersey	14	364	104	201	248	283	26	733	1,418	17	20
New York	15	526	115	222	323	370	34	742	1,435	21	24
Pennsylvania	13	414	117	226	283	319	32	892	1,725	21	24
CENTRAL	17	475	114	221	308	351	29	686	1,327	18	21
Illinois	17	453	102	197	288	328	26	585	1,132	17	19
Indiana	18	533	116	224	337	383	30	646	1,250	19	21
Michigan	17	410	84	162	251	291	24	496	959	15	17
Ohio	16	493	133	257	331	377	32	851	1,646	21	24
POCAHONTAS	13	429	164	317	342	384	33	1,251	2,420	26	29
Virginia	16	509	185	358	395	444	32	1,164	2,251	25	28
West Virginia	11	367	147	284	301	337	34	1,351	2,613	28	31
SOUTHEASTERN	17	372	84	162	227	264	21	484	936	13	15
Alabama	18	351	73	141	204	242	20	413	799	12	14
Florida	18	211	49	95	166	204	12	269	520	9	11
Georgia	18	364	64	124	212	249	20	351	679	12	14
Kentucky	18	476	153	296	341	382	27	862	1,667	19	21
Mississippi	15	348	68	132	196	222	23	440	851	13	14
North Carolina	17	406	71	137	212	251	23	408	789	12	14
South Carolina	17	309	62	120	173	207	19	372	720	10	13
Tennessee	16	334	75	145	197	232	21	465	899	12	14
WESTERN TRUNK LINE	17	390	76	147	233	271	23	453	876	14	16
Iowa	18	383	72	139	232	273	21	400	774	13	15
Kansas	18	432	86	166	262	302	24	487	942	15	17
Minnesota	15	341	76	147	209	241	22	499	965	14	16
Missouri	18	454	87	168	271	312	25	484	936	15	17
Nebraska	17	428	76	147	253	295	25	449	868	15	18
North Dakota	16	335	68	132	192	225	21	419	810	12	14
South Dakota	15	261	53	103	158	188	18	362	700	11	13
Wisconsin	14	354	67	130	205	236	25	471	911	14	16
SOUTHWESTERN	17	380	75	145	233	270	22	430	832	13	16
Arkansas	18	424	86	166	249	278	24	479	927	14	15
Louisiana	17	329	74	143	203	230	20	444	859	12	14
New Mexico	19	536	98	190	340	397	28	512	990	18	21
Oklahoma	16	312	66	128	199	234	20	420	812	13	15
Texas	18	381	71	137	232	272	22	402	778	13	15
PACIFIC NORTHWEST	16	440	86	166	264	310	27	533	1,031	16	19
Idaho	16	397	80	155	239	283	25	497	961	15	18
Montana	16	529	106	205	317	270	33	652	1,261	20	23
Oregon	15	299	61	118	171	206	20	400	774	11	14
Washington	14	277	62	120	172	208	20	442	855	12	15
Wyoming	21	768	127	246	456	524	37	619	1,197	22	26
PACIFIC SOUTHWEST	16	458	77	149	252	246	28	476	921	16	18
Arizona	18	589	100	193	380	437	32	548	1,060	21	24
California	15	389	73	141	234	280	25	481	930	15	18
Colorado	16	384	43	83	131	155	25	273	528	[illegible]	10
Nevada	19	795	15	29	458	541	42	777	1,503	25	28
Utah	17	505	9	17	289	348	30	540	1,045	17	21

Analysis 108.2 Rail Through Train Performance - 1932

OPERATING DISTRICT	TRAIN MILES PER TRAIN HOUR	MANIFEST					TRAIN MILES PER TRAIN HOUR	DRAG				
		UNITS PER TRAIN MILE						UNITS PER TRAIN MILE				
			TON MILES						TON MILES			
		LOAD-ED CARS	NET	EQUAT-ED	CAR	GROSS		LOAD-ED CARS	NET	EQUAT-ED	CAR	GROSS
UNITED STATES	21	40	752	1,455	2,133	2,414	17	26	794	1,536	2,101	2,372
NEW ENGLAND	21	48	714	1,381	2,037	2,353	16	32	636	1,230	1,996	2,292
Connecticut	22	52	747	1,445	2,134	2,464	17	32	663	1,282	2,115	2,434
Maine	19	37	667	1,290	1,830	1,985	15	33	682	1,319	2,029	2,321
Massachusetts	20	47	714	1,381	2,122	2,454	15	31	601	1,162	1,885	2,162
New Hampshire	21	60	975	1,886	2,649	2,948	16	37	744	1,439	2,219	2,561
Rhode Island	24	50	641	1,240	1,853	2,180	16	35	753	1,457	2,727	3,075
Vermont	18	47	660	1,277	1,732	2,049	17	29	463	896	1,473	1,718
TRUNK LINE	21	49	1,052	2,035	2,647	2,983	15	26	943	1,824	2,456	2,775
Delaware	22	50	881	1,704	2,821	3,042	18	9	197	381	1,174	1,380
Maryland	18	40	933	1,805	2,332	2,658	14	28	1,338	2,588	3,284	3,692
New Jersey	21	35	888	1,718	2,206	2,467	14	34	1,486	2,874	3,118	3,378
New York	22	58	1,048	2,027	2,824	3,187	18	26	744	1,439	2,285	2,596
Pennsylvania	20	48	1,100	2,128	2,652	2,986	13	25	1,076	2,081	2,543	2,871
CENTRAL	22	39	703	1,360	2,045	2,326	17	27	941	1,820	2,327	2,597
Illinois	23	35	624	1,207	1,831	2,089	16	24	742	1;435	1,990	2,220
Indiana	24	45	777	1,503	2,306	2,590	18	24	729	1,410	2,056	2,318
Michigan	21	33	646	1,250	1,857	2,122	18	24	533	1,031	1,825	2,078
Ohio	22	44	778	1,505	2,242	2,552	16	31	1,252	2,422	2,784	3,091
POCAHONTAS	20	44	1,139	2,203	2,690	3,021	15	38	1,793	3,468	3,549	3,910
Virginia	21	45	1,375	2,660	3,095	3,429	18	35	1,471	2,845	2,972	3,311
West Virginia	19	43	884	1,710	2,255	2,581	12	43	2,244	4,341	4,359	4,751
SOUTHEASTERN	21	32	568	1,099	1,680	1,913	19	25	664	1,284	1,678	1,911
Alabama	22	31	562	1,087	1,658	1,923	20	23	497	961	1,374	1,599
Florida	23	21	550	1,064	1,742	1,969	23	13	250	484	899	1,103
Georgia	22	34	547	1,058	1,739	1,958	20	20	369	714	1,301	1,515
Kentucky	23	32	632	1,222	1,812	2,126	20	31	1,114	2,155	2,360	2,600
Mississippi	20	35	621	1,201	1,766	1,933	18	19	448	867	1,399	1,590
North Carolina	21	35	536	1,037	1,628	1,874	18	28	527	1,019	1,522	1,778
South Carolina	18	24	474	917	1,292	1,536	19	24	487	942	1,351	1,607
Tennessee	20	30	553	1,070	1,487	1,724	18	24	566	1,095	1,464	1,700
WESTERN TRUNK LINE	21	37	666	1,288	1,967	2,242	17	23	515	996	1,719	1,954
Iowa	22	30	523	1,012	1,600	1,875	18	20	452	874	1,598	1,805
Kansas	22	39	728	1,408	2,136	2,418	19	19	465	899	1,679	1,937
Minnesota	19	39	777	1,503	2,094	2,353	16	27	738	1,427	2,015	2,290
Missouri	23	36	627	1,213	1,938	2,185	19	26	618	1,195	1,952	2,214
Nebraska	21	46	789	1,526	2,343	2,674	17	16	305	590	1,552	1,801
North Dakota	19	45	863	1,669	2,214	2,478	18	24	536	1,037	1,717	1,944
South Dakota	20	33	633	1,224	1,732	2,032	17	24	513	992	1,478	1,668
Wisconsin	18	39	709	1,371	2,063	2,332	16	29	583	1,128	1,774	1,994
SOUTHWESTERN	22	33	621	1,201	1,887	2,138	19	22	490	948	1,657	1,899
Arkansas	24	33	661	1,279	1,829	2,030	18	19	439	849	1,641	1,833
Louisiana	22	28	605	1,170	1,699	1,873	19	27	664	1,284	1,685	1,905
New Mexico	21	43	725	1,402	2,419	2,748	18	12	297	574	1,706	2,008
Oklahoma	22	30	600	1,161	1,784	2,038	19	27	580	1,122	1,751	1,994
Texas	21	33	593	1,147	1,862	2,132	19	20	412	797	1,566	1,814
PACIFIC NORTHWEST	19	49	870	1,683	2,468	2,848	18	18	447	865	1,832	2,152
Idaho	20	46	857	1,658	2,362	2,800	17	11	471	911	2,189	2,595
Montana	19	57	1,043	2,017	2,842	3,226	18	26	568	1,099	2,133	2,495
Oregon	18	39	765	1,480	2,043	2,427	14	16	412	797	1,638	1,933
Washington	16	39	767	1,484	2,050	2,362	16	18	492	952	1,483	1,769
Wyoming	23	56	848	1,640	2,668	3,051	20	11	295	571	1,800	2,092
PACIFIC SOUTHWEST	20	44	705	1,364	2,118	2,436	17	12	230	445	1,491	1,764
Arizona	21	43	718	1,389	2,464	2,793	20	8	146	282	1,890	2,204
California	19	41	742	1,435	2,213	2,559	16	12	281	544	1,721	2,051
Colorado	21	38	385	745	1,127	1,314	16	15	169	327	729	898
Nevada	20	64	1,150	2,224	3,179	3,498	19	8	198	383	2,149	2,456
Utah	21	43	685	1,325	2,134	2,576	15	12	480	928	1,706	2,063

SECTION 108. UTILIZATION

Analysis 108.3 Train Operated - 1932

	TOTAL	MANIFEST	DRAG	WAY	TOTAL MAIN LINE	BRANCH LINE WAY
UNITED STATES	5,332,999	1,341,731	1,307,706	1,445,930	4,095,367	1,237,632
NEW ENGLAND	248,105	40,482	61,060	77,648	179,190	68,915
Connecticut	65,229	15,596	20,593	21,217	57,406	7,823
Maine	58,048	4,018	10.035	13,001	27,054	30,994
Massachusetts	87,443	11,574	18,358	32,199	62,131	25,312
New Hampshire	8,133	661	2,037	2,108	4,806	3,327
Rhode Island	12,134	3,425	4,788	3,115	11,328	806
Vermont	17,118	5,208	5,249	6,008	16,465	653
TRUNK LINE	1,262,709	275,251	272,461	379,109	926,821	335,888
Delaware	9,762	2,352	766	3,475	6,593	3,169
Maryland	50,226	23,873	6,258	12,565	42,696	7,530
New Jersey	117,918	39,019	20,551	46,278	105,848	12,070
New York	362,397	72,390	107,102	131,760	311,252	51,145
Pennsylvania	722,406	137,617	137,784	185,031	460,432	261,974
CENTRAL	1,061,147	322,690	335,882	301,995	960,567	100,580
Illinois	346,446	115,091	117,466	74,296	306,853	39,593
Indiana	139,651	38,236	53,727	41,217	133,180	6,471
Michigan	151,815	53,446	26,380	47,637	127,463	24,352
Ohio	423,235	115,917	138,309	138,845	393,071	30,164
POCAHONTAS	295,205	51,951	113,494	59,677	225,122	70,083
Virginia	124,221	23,259	55,838	19,904	99,001	25,220
West Virginia	170,984	28,692	57,656	39,773	126,121	44,863
SOUTHEASTERN	634,077	109,764	218,054	171,481	499,299	134,778
Alabama	90,647	11,803	31,823	30,038	73,664	16,983
Florida	59,931	5,523	7,735	16,920	30,198	29,733
Georgia	96,863	17,179	28,158	22,675	68,012	28,851
Kentucky	130,161	16,564	71,268	25,852	113,684	16,477
Mississippi	64,842	23,310	8,248	21,413	52,971	11,871
North Carolina	94,461	17,945	31,304	28,270	77,519	16,942
South Carolina	16,388	3,976	5,380	5,647	15,003	1,385
Tennessee	80,784	13,464	34,118	20,666	68,248	12,536
WESTERN TRUNK LINE	921,968	262,336	179,375	223,482	665,193	256,775
Iowa	189,557	68,474	45,278	32,374	146,126	43,431
Kansas	156,398	57,570	21,332	33,611	112,513	43,885
Minnesota	88,250	18,462	16,276	32,125	66,863	21,387
Missouri	154,062	51,837	25,760	37,024	114,621	39,441
Nebraska	126,800	33,261	23,597	28,181	85,039	41,761
North Dakota	48,393	9,217	7,343	11,707	28,267	20,126
South Dakota	34,880	2,345	9,925	10,798	23,068	11,812
Wisconsin	123,628	21,170	29,864	37,662	88,696	34,932
SOUTHWESTERN	466,523	141,914	62,589	117,039	321,542	144,981
Arkansas	73,034	33,604	7,259	14,843	55,706	17,328
Louisiana	61,735	13,585	6,354	17,980	37,919	23,816
New Mexico	25,743	9,468	2,020	4,530	16,018	9,725
Oklahoma	82,849	16,749	20,707	26,730	64,186	18,663
Texas	223,162	68,508	26,249	52,956	147,713	75,449
PACIFIC NORTHWEST	200,557	54,085	37,520	43,956	135,561	64,996
Idaho	43,215	10,980	1,150	7,660	19,790	23,425
Montana	43,233	14,251	9,216	8,942	32,409	10,824
Oregon	19,406	4,736	669	7,887	13,292	6,114
Washington	55,250	9,942	11,807	14,021	35,770	19,480
Wyoming	39,453	14,176	14,678	5,446	34,300	5,153
PACIFIC SOUTHWEST	242,708	83,258	27,271	71,543	182,072	60,636
Arizona	16,577	9,531	2,079	1,437	13,047	3,530
California	99,286	38,596	6,342	39,276	84,214	15,072
Colorado	86,376	22,740	11,725	20,121	54,586	31,790
Nevada	13,036	6,666	3,245	1,404	11,315	1,721
Utah	27,433	5,725	3,880	9,305	18,910	8,523

SECTION 109. YARDINGS

Analysis 109.1 Rail Unit Costs of Intermediate Yardings

	AGGREGATE CARS HANDLED			COST PER CAR HANDLED			
		MULTIPLE CARRIER				MULTIPLE CARRIER	
	SINGLE CARRIER (000)	INTER-CHANGE (000)	INTER-MEDIATE (000)	ALL YARDINGS $	SINGLE CARRIER $	INTER-CHANGE $	INTER-MEDIATE $
UNITED STATES	68,858	35,167	982	3.23	2.41	4.80	4.88
EASTERN	34,760	21,657	538	3.42	2.52	4.83	4.68
SOUTHERN	13,026	4,643	97	2.72	2.04	4.52	7.23
WESTERN	21,072	8,866	319	3.18	2.44	4.86	4.90
NEW ENGLAND	2,279	1,613	-	2.90	2.57	3.37	-
TRUNK LINE	15,676	9,958	46	3.62	2.76	4.97	6.83
CENTRAL	16,805	10,086	476	3.31	2.30	4.93	4.61
POCAHONTAS	5,237	1,483	35	2.24	1.76	3.82	7.75
SOUTHEASTERN	7,789	3,160	62	3.01	2.23	4.86	6.96
WESTERN TRUNK LINE	10,622	4,652	212	3.21	2.45	4.89	4.40
SOUTHWESTERN	5,777	2,428	26	2.64	1.93	4.29	4.93
PACIFIC NORTHWEST	1,842	415	3	4.31	3.57	7.54	10.59
PACIFIC SOUTHWEST	2,831	1,371	21	3.51	2.65	5.00	22.15

Analysis 110.1 Rail Unit Costs of Road Service - 1932

OPERATING DISTRICTS	TRAIN MILE	TRAIN HOUR	LOADED CAR MILE	NET TON MILE	CAR TON MILE	GROSS TON MILE	EQUATED TON MILE
UNITED STATES	$ 2.29	$ 36.80	$ .0869	$ .00381	$ .00138	$ .00120	$ .00197
EASTERN	$ 2.52	$ 38.72	$ .0848	$ .00350	$ .00132	$ .00116	$ .00181
SOUTHERN	2.19	35.06	.0902	.00326	.00134	.00117	.00169
WESTERN	2.14	35.57	.0879	.00462	.00148	.00127	.00239
NEW ENGLAND	$ 2.98	$ 43.33	$ .1067	$ .00612	$ .00202	$ .00173	$ .00316
Connecticut	3.25	51.57	.0959	.00557	.00184	.00157	.00288
Maine	2.88	43.36	.0132	.00694	.00234	.00201	.00359
Massachusetts	2.97	40.46	.1101	.00632	.00207	.00177	.00327
New Hampshire	3.45	47.02	.0108	.00590	.00204	.00176	.00305
Rhode Island	3.19	50.03	.0919	.00567	.00174	.00150	.00293
Vermont	2.23	29.34	.0801	.00539	.00181	.00152	.00279
TRUNK LINE	$ 2.92	$ 40.73	$ .0917	$ .00357	$ .00141	$ .00123	$ .00185
Delaware	1.89	24.02	.0747	.00417	.00126	.00111	.00217
Maryland	2.77	35.90	.0886	.00340	.00136	.00118	.00176
New Jersey	2.84	40.38	.1109	.00388	.00162	.00142	.00201
New York	3.02	46.66	.0886	.00407	.00144	.00126	.00210
Pennsylvania	2.91	38.24	.0922	.00326	.00136	.00119	.00169
CENTRAL	$ 2.18	$ 36.31	$ .0765	$ .00318	$ .00118	$ .00103	$ .00164
Illinois	2.04	35.35	.0780	.00347	.00122	.00107	.00179
Indiana	2.17	38.83	.0728	.00335	.00115	.00101	.00173
Michigan	2.13	35.80	.0872	.00426	.00142	.00122	.00220
Ohio	2.34	36.40	.0738	.00274	.00109	.00097	.00142
POCAHONTAS	$ 2.82	$ 36.72	$ .0856	$ .00225	$ .00107	$ .00096	$ .00116
Virginia	2.59	41.34	.0812	.00222	.00104	.00093	.00115
West Virginia	3.06	33.15	.0903	.00226	.00110	.00098	.00117
SOUTHEASTERN	$ 1.98	$ 34.35	$ .0925	$ .00409	$ .00151	$ .00130	$ .00211
Alabama	1.93	34.22	.0974	.00466	.00167	.00141	.00241
Florida	1.97	36.06	.1712	.00732	.00217	.00177	.00378
Georgia	1.80	32.96	.0904	.00516	.00155	.00132	.00267
Kentucky	2.14	37.99	.0798	.00247	.00111	.00193	.00128
Mississippi	1.86	28.66	.0823	.00424	.00146	.00129	.00219
North Carolina	2.05	35.56	.0875	.00500	.00167	.00141	.00259
South Carolina	1.98	32.91	.1066	.00534	.00190	.00158	.00276
Tennessee	2.04	33.06	.0989	.00440	.00167	.00142	.00228
WESTERN TRUNK LINE	$ 1.99	$ 33.22	$ .0851	$ .00439	$ .00142	$ .00123	$ .00227
Iowa	1.85	33.14	.0865	.00460	.00142	.00121	.00238
Kansas	1.99	35.23	.0815	.00409	.00134	.00116	.00211
Minnesota	2.29	35.01	.1026	.00460	.00167	.00145	.00238
Missouri	1.95	34.97	.0771	.00402	.00128	.00112	.00208
Nebraska	1.90	32.05	.0749	.00423	.00126	.00108	.00219
North Dakota	2.05	33.16	.0991	.00488	.00172	.00147	.00252
South Dakota	1.93	28.24	.1082	.00532	.00178	.00150	.00275
Wisconsin	2.14	30.47	.0861	.00451	.00148	.00129	.00233
SOUTHWESTERN	$ 1.99	$ 34.33	$ .0904	$ .00460	$ .00147	$ .00127	$ .00238
Arkansas	1.81	32.40	.0764	.00375	.00130	.00116	.00194
Louisiana	2.02	33.86	.0102	.00456	.00166	.00147	.00236
New Mexico	2.39	45.80	.0854	.00466	.00134	.00115	.00241
Oklahoma	1.86	29.43	.0941	.00445	.00147	.00125	.00230
Texas	1.99	35.19	.0924	.00496	.00151	.00129	.00256
PACIFIC NORTHWEST	$ 2.53	$ 40.68	$ .0926	$ .00474	$ .00154	$ .00131	$ .00245
Idaho	2.20	35.37	.0890	.00442	.00148	.00124	.00229
Montana	2.74	44.43	.0840	.00420	.00140	.00120	.00217
Oregon	2.55	38.76	.1296	.00638	.00226	.00187	.00330
Washington	2.77	39.01	.1409	.00628	.00226	.00187	.00325
Wyoming	2.17	44.45	.0578	.00350	.00097	.00085	.00181
PACIFIC SOUTHWEST	$ 2.52	$ 40.66	$ .0888	$ .00528	$ .00161	$ .00138	$ .00273
Arizona	2.64	48.44	.0822	.00483	.00127	.00110	.00250
California	2.66	40.55	.1042	.00551	.00173	.00144	.00285
Colorado	2.05	31.55	.0822	.00737	.00241	.00202	.00381
Nevada	2.90	55.21	.0694	.00373	.00113	.00101	.00193
Utah	2.53	42.72	.0846	.00468	.00141	.00122	.00242

Analysis 110.2 Rail Main Line Unit Costs of Road Service - 1932

	TRAIN MILE	TRAIN HOUR	LOADED CAR MILE	NET TON MILE	EQUATED TON MILE	CAR TON MILE	GROSS TON MILE
UNITED STATES	$ 2.36	$ 39.51	$ .0817	$ .0036	$ .0019	$ .0013	$ .0013
EASTERN DISTRICT	2.53	40.81	.0807	.0036	.0019	.0013	.0011
SOUTHERN DISTRICT	2.22	37.24	.0846	.0031	.0016	.0013	.0011
WESTERN DISTRICT	2.24	39.08	.0815	.0043	.0022	.0014	.0012
NEW ENGLAND	$ 3.14	$ 46.83	$ .0979	$ .0056	$ .0029	$ .0019	$ .0016
Connecticut	3.32	53.65	.0934	.0054	.0028	.0018	.0015
Maine	3.42	49.09	.1180	.0061	.0032	.0020	.0018
Massachusetts	3.00	44.00	.0980	.0056	.0029	.0019	.0016
New Hampshire	3.62	54.93	.0932	.0050	.0026	.0018	.0015
Rhode Island	3.20	51.86	.0882	.0054	.0028	.0017	.0014
Vermont	2.27	30.23	.0792	.0053	.0027	.0018	.0015
TRUNK LINE	$ 2.94	$ 44.55	$ .0855	$ .0034	$ .0018	$ .0013	$ .0012
Delaware	1.97	27.12	.0642	.0036	.0019	.0011	.0010
Maryland	2.78	38.42	.0850	.0033	.0017	.0013	.0011
New Jersey	2.88	45.35	.1034	.0036	.0019	.0015	.0013
New York	3.02	48.09	.0855	.0040	.0021	.0014	.0012
Pennsylvania	2.93	43.10	.0837	.0030	.0016	.0012	.0011
CENTRAL	$ 2.20	$ 37.28	$ .0747	$ .0031	$ .0016	$ .0012	$ .0010
Illinois	2.05	36.29	.0758	.0034	.0018	.0012	.0011
Indiana	2.18	39.27	.0722	.0033	.0017	.0011	.0010
Michigan	2.17	37.89	.0842	.0041	.0021	.0014	.0012
Ohio	2.33	37.16	.0724	.0027	.0014	.0011	.0009
POCAHONTAS	$ 2.78	$ 40.47	$ .0794	$ .0021	$ .0011	$ .0010	$ .0009
Virginia	2.58	43.75	.0775	.0021	.0011	.0010	.0009
West Virginia	3.03	37.50	.0814	.0021	.0011	.0010	.0009
SOUTHEASTERN	$ 2.03	$ 35.97	$ .0872	$ .0039	$ .0020	$ .0014	$ .0012
Alabama	1.96	35.76	.0927	.0045	.0024	.0016	.0014
Florida	2.19	41.27	.1513	.0066	.0034	.0019	.0016
Georgia	1.91	35.86	.0859	.0049	.0025	.0015	.0013
Kentucky	2.27	39.29	.0771	.0024	.0012	.0011	.0010
Mississippi	1.85	29.09	.0784	.0040	.0021	.0014	.0012
North Carolina	2.09	37.05	.0828	.0047	.0024	.0016	.0014
South Carolina	1.97	32.36	.1011	.0050	.0026	.0018	.0015
Tennessee	2.06	33.93	.0944	.0042	.0022	.0016	.0014
WESTERN TRUNK LINE	$ 2.11	$ 36.72	$ .0792	$ .0041	$ .0021	$ .0013	$ .0012
Iowa	1.93	35.83	.0819	.0044	.0023	.0014	.0012
Kansas	2.12	39.66	.0740	.0037	.0019	.0012	.0011
Minnesota	2.47	38.64	.0962	.0043	.0022	.0016	.0014
Missouri	2.02	38.48	.0731	.0038	.0020	.0012	.0011
Nebraska	2.04	36.86	.0664	.0038	.0020	.0011	.0010
North Dakota	2.30	38.66	.0901	.0045	.0023	.0016	.0014
South Dakota	2.06	31.20	.1021	.0050	.0026	.0017	.0014
Wisconsin	2.23	32.70	.0816	.0043	.0022	.0014	.0012
SOUTHWESTERN	$ 2.06	$ 36.93	$ .0837	$ .0043	$ .0022	$ .0014	$ .0012
Arkansas	1.84	34.79	.0707	.0035	.0018	.0012	.0011
Louisiana	2.10	36.14	.0935	.0041	.0021	.0015	.0014
New Mexico	2.60	51.64	.0812	.0046	.0024	.0013	.0011
Oklahoma	1.90	30.00	.0885	.0042	.0042	.0014	.0012
Texas	2.09	38.55	.0952	.0046	.0024	.0014	.0012
PACIFIC NORTHWEST	$ 2.69	$ 46.12	$ .0830	$ .0043	$ .0022	$ .0014	$ .0012
Idaho	2.44	42.41	.0738	.0037	.0019	.0013	.0011
Montana	2.90	48.46	.0795	.0040	.0021	.0013	.0011
Oregon	3.02	50.45	.1070	.0054	.0028	.0019	.0016
Washington	2.95	44.08	.1264	.0057	.0029	.0020	.0017
Wyoming	2.19	45.54	.0568	.0035	.0018	.0010	.0008
PACIFIC SOUTHWEST	$ 2.61	$ 44.17	$ .0838	$ .0050	$ .0026	$ .0015	$ .0013
Arizona	2.70	51.16	.0776	.0046	.0024	.0012	.0011
California	2.79	44.14	.0981	.0052	.0027	.0016	.0014
Colorado	2.05	34.42	.0763	.0666	.0034	.0022	.0018
Nevada	3.06	59.86	.0679	.0037	.0019	.0011	.0010
Utah	2.57	44.71	.0805	.0045	.0023	.0014	.0012

Analysis 110.3 Rail Manifest Train Unit Costs of Road Service - 1932

	SCHEDULES (000)	TRAIN MILES PER TRAIN HOUR	LOADED CARS PER TRAIN	COSTS OF MANIFEST TRAINS PER						
				TRAIN HOUR	TRAIN MILE	LOADED CAR MILE	NET TON MILE	EQUATED TON MILE	CAR TON MILE	GROSS TON MILE
UNITED STATES	1,342	21	40	$53.15	$2.51	$.062	$.0033	$.0017	$.0012	$.0010
NEW ENGLAND	40	21	48	$62.46	$3.04	$.064	$.0042	$.0022	$.0014	$.0013
Connecticut	16	22	52	71.50	3.26	.063	.0044	.0023	.0015	.0013
Maine	4	19	37	60.00	3.11	.084	.0047	.0024	.0017	.0015
Massachusetts	12	20	47	57.69	2.91	.062	.0041	.0021	.0014	.0012
New Hampshire	1	21	60	74.58	3.56	.059	.0037	.0019	.0013	.0012
Rhode Island	3	24	50	73.16	3.00	.060	.0047	.0024	.0016	.0014
Vermont	5	18	47	43.76	2.39	.050	.0036	.0019	.0014	.0012
TRUNK LINE	275	21	49	$62.72	$3.03	$.062	$.0029	$.0015	$.0011	$.0010
Delaware	2	22	50	60.06	2.68	.054	.0030	.0016	.0010	.0009
Maryland	24	18	40	51.40	2.84	.071	.0030	.0016	.0012	.0011
New Jersey	39	21	35	64.55	3.01	.086	.0034	.0018	.0014	.0012
New York	72	22	58	75.73	3.37	.058	.0032	.0017	.0012	.0011
Pennsylvania	138	20	48	57.40	2.87	.060	.0026	.0014	.0010	.0010
CENTRAL	323	22	39	$51.25	$2.29	$.059	$.0033	$.0017	$.0011	$.0010
Illinois	115	23	35	48.12	2.09	.060	.0033	.0017	.0011	.0010
Indiana	38	24	45	57.95	2.44	.054	.0031	.0016	.0011	.0011
Michigan	53	21	33	49.02	2.34	.071	.0036	.0019	.0013	.0011
Ohio	116	22	44	52.83	2.40	.055	.0031	.0016	.0011	.0009
POCAHONTAS	52	20	44	$50.74	$2.55	$.058	$.0022	$.0011	$.0010	$.0009
Virginia	23	21	45	55.74	2.68	.060	.0019	.0010	.0009	.0008
West Virginia	29	19	43	45.84	2.42	.056	.0027	.0014	.0011	.0009
SOUTHEASTERN	110	21	32	$47.51	$2.23	$.070	$.0039	$.0020	$.0013	$.0012
Alabama	12	22	31	49.88	2.28	.075	.0041	.0021	.0014	.0012
Florida	6	23	21	67.43	2.95	.142	.0054	.0028	.0017	.0015
Georgia	17	22	34	51.31	2.29	.067	.0042	.0022	.0013	.0012
Kentucky	17	23	32	44.52	1.96	.061	.0031	.0016	.0011	.0009
Mississippi	23	20	35	37.63	1.86	.054	.0030	.0016	.0011	.0010
North Carolina	18	21	35	50.97	2.46	.071	.0046	.0024	.0015	.0013
South Carolina	4	18	24	39.23	2.18	.092	.0046	.0024	.0017	.0014
Tennessee	13	20	30	42.66	2.09	.070	.0038	.0020	.0014	.0012
WESTERN TRUNK LINE	262	21	37	$47.62	$2.22	$.060	$.0033	$.0017	$.0011	$.0010
Iowa	68	22	30	43.32	1.95	.066	.0038	.0020	.0012	.0011
Kansas	58	22	39	51.03	2.32	.059	.0032	.0017	.0011	.0010
Minnesota	18	19	39	50.00	2.64	.068	.0034	.0018	.0013	.0011
Missouri	52	23	36	49.11	2.09	.059	.0033	.0017	.0011	.0010
Nebraska	33	21	46	48.62	2.26	.049	.0029	.0015	.0010	.0008
North Dakota	9	19	45	54.45	2.92	.064	.0034	.0018	.0013	.0012
South Dakota	2	20	33	50.00	2.47	.075	.0039	.0020	.0014	.0012
Wisconsin	21	18	39	43.18	2.37	.061	.0033	.0017	.0012	.0010
SOUTHWESTERN	142	22	33	$49.38	$2.30	$.069	$.0037	$.0019	$.0012	$.0011
Arkansas	34	24	33	45.11	1.89	.057	.0029	.0015	.0010	.0009
Louisiana	14	22	28	48.67	2.23	.080	.0037	.0019	.0013	.0012
New Mexico	9	21	43	62.24	2.91	.067	.0040	.0021	.0012	.0011
Oklahoma	17	22	30	45.15	2.10	.069	.0035	.0018	.0012	.0010
Texas	69	21	33	49.01	3.38	.073	.0040	.0021	.0013	.0011
PACIFIC NORTHWEST	54	19	49	60.05	3.11	.063	.0036	.0019	.0013	.0011
Idaho	11	20	46	58.76	2.93	.064	.0034	.0018	.0012	.0010
Montana	14	19	57	65.42	3.44	.060	.0033	.0017	.0012	.0011
Oregon	5	18	39	67.13	3.73	.095	.0049	.0025	.0018	.0015
Washington	10	16	39	55.91	3.58	.092	.0047	.0024	.0017	.0015
Wyoming	14	23	56	55.27	2.42	.043	.0029	.0015	.0009	.0008
PACIFIC SOUTHWEST	83	20	44	$57.41	$2.87	$.066	$.0041	$.0021	$.0014	$.0012
Arizona	10	21	43	59.32	2.93	.068	.0041	.0021	.0012	.0011
California	39	19	41	58.28	3.08	.075	.0041	.0021	.0014	.0012
Colorado	23	21	38	48.44	2.26	.060	.0059	.0031	.0020	.0017
Nevada	7	20	64	67.50	3.35	.053	.0029	.0015	.0011	.0010
Utah	6	21	43	56.93	2.76	.064	.0040	.0021	.0013	.0011

Analysis 110.4 Rail Drag Train Unit Costs of Road Service - 1932

	SCHEDULES (000)	TRAIN MILES PER TRAIN HOUR	LOADED CARS PER TRAIN	COSTS OF DRAG TRAINS PER						
				TRAIN HOUR	TRAIN MILE	LOADED CAR MILE	NET TON MILE	EQUATED TON MILE	CAR TON MILE	GROSS TON MILE
UNITED STATES	1,308	17	26	$42.93	$2.55	$.099	$.0032	$.0017	$.0012	$.0010
NEW ENGLAND	61	16	32	$53.10	$3.35	$.105	$.0053	$.0027	$.0017	$.0015
Connecticut	21	17	32	59.50	3.47	.109	.0052	.0027	.0016	.0014
Maine	10	15	33	54.28	3.62	.108	.0053	.0027	.0018	.0016
Massachusetts	18	15	31	50.25	3.30	.108	.0055	.0028	.0018	.0015
New Hampshire	2	16	37	58.26	3.69	.100	.0050	.0026	.0017	.0014
Rhode Island	5	16	35	58.46	3.71	.105	.0049	.0025	.0014	.0012
Vermont	5	17	29	37.41	2.24	.078	.0048	.0025	.0015	.0013
TRUNK LINE	272	15	26	$48.69	$3.28	$.126	$.0035	$.0018	$.0013	$.0012
Delaware	1	18	9	31.41	1.75	.192	.0088	.0045	.0015	.0013
Maryland	6	14	28	55.01	3.89	.141	.0029	.0015	.0021	.0010
New Jersey	21	14	34	63.20	4.54	.132	.0031	.0016	.0015	.0013
New York	107	18	26	55.13	3.10	.118	.0042	.0022	.0014	.0012
Pennsylvania	138	13	25	43.37	3.34	.132	.0031	.0016	.0013	.0012
CENTRAL	336	17	27	$39.75	$2.40	$.089	$.0025	$.0013	$.0010	$.0009
Illinois	117	16	24	35.73	2.17	.090	.0029	.0015	.0010	.0010
Indiana	54	18	24	40.02	2.28	.096	.0031	.0016	.0011	.0010
Michigan	26	18	24	40.23	2.19	.091	.0041	.0021	.0012	.0011
Ohio	138	16	31	42.57	2.67	.086	.0021	.0011	.0010	.0009
POCAHONTAS	113	15	38	$50.24	$3.43	$.090	$.0019	$.0010	$.0010	$.0009
Virginia	56	18	35	55.13	3.11	.088	.0021	.0011	.0010	.0009
West Virginia	58	12	43	45.67	3.88	.091	.0017	.0009	.0009	.0008
SOUTHEASTERN	218	19	25	$41.01	$2.12	$.083	$.0032	$.0017	$.0013	$.0011
Alabama	32	20	23	39.21	1.96	.084	.0039	.0020	.0014	.0011
Florida	8	23	13	44.31	1.95	.146	.0078	.0040	.0022	.0011
Georgia	28	20	20	39.36	1.96	.097	.0053	.0027	.0015	.0011
Kentucky	71	20	31	44.88	2.30	.073	.0021	.0011	.0010	.0010
Mississippi	8	18	19	32.41	1.83	.098	.0041	.0021	.0013	.0012
North Carolina	31	18	28	41.62	2.25	.081	.0043	.0022	.0015	.0013
South Carolina	5	19	24	38.42	2.05	.086	.0042	.0022	.0015	.0013
Tennessee	34	18	24	37.94	2.09	.089	.0036	.0019	.0014	.0011
WESTERN TRUNK LINE	179	17	23	$38.25	$2.21	$.096	$.0043	$.0022	$.0013	$.0011
Iowa	45	18	20	35.43	2.02	.099	.0045	.0023	.0013	.0011
Kansas	21	19	19	39.74	2.07	.106	.0045	.0023	.0012	.0011
Minnesota	16	16	27	40.42	2.58	.095	.0035	.0018	.0013	.0011
Missouri	26	19	26	43.49	2.32	.089	.0038	.0020	.0012	.0010
Nebraska	24	17	16	35.94	2.10	.129	.0069	.0036	.0014	.0012
North Dakota	7	18	24	44.06	2.51	.104	.0045	.0023	.0015	.0013
South Dakota	10	17	24	36.21	2.18	.093	.0043	.0022	.0015	.0013
Wisconsin	30	16	29	36.51	2.25	.078	.0039	.0020	.0013	.0011
SOUTHWESTERN	63	19	22	$39.62	$2.12	$.095	$.0043	$.0022	$.0013	$.0011
Arkansas	7	18	19	34.00	1.91	.100	.0043	.0022	.0012	.0010
Louisiana	6	19	27	48.73	2.58	.096	.0039	.0020	.0015	.0014
New Mexico	2	18	12	42.98	2.37	.205	.0080	.0041	.0014	.0012
Oklahoma	21	19	27	39.94	2.11	.079	.0036	.0019	.0012	.0011
Texas	26	19	20	37.78	2.01	.100	.0049	.0025	.0013	.0011
PACIFIC NORTHWEST	38	18	18	$48.13	$2.70	$.148	$.0059	$.0031	$.0015	$.0013
Idaho	1	17	11	46.91	2.69	.244	.0057	.0029	.0012	.0010
Montana	10	18	26	53.96	3.01	.116	.0053	.0027	.0014	.0012
Oregon	.1	14	16	47.58	3.50	.221	.0085	.0044	.0021	.0018
Washington	12	16	18	51.64	3.14	.172	.0064	.0033	.0021	.0018
Wyoming	15	20	11	37.12	1.87	.169	.0063	.0033	.0010	.0009
PACIFIC SOUTHWEST	27	17	12	$41.17	$2.46	$.214	$.0107	$.0055	$.0017	$.0014
Arizona	2	20	8	47.58	2.44	.323	.0167	.0086	.0013	.0011
California	6	16	12	46.49	2.82	.237	.0100	.0052	.0016	.0014
Colorado	12	16	15	31.50	2.03	.139	.0119	.0062	.0028	.0023
Nevada	3	19	8	46.57	2.49	.330	.0126	.0065	.0012	.0010
Utah	4	15	12	45.26	2.97	.240	.0061	.0032	.0017	.0014

Analysis 111.1 Road Service Units - Main Line Way Trains - 1932

OPERATING DISTRICT	TRAIN MILES THOUSANDS	LOADED CARS THOUSANDS	NET TONS THOUSANDS	LOADED CAR MILES THOUSANDS	NET TON MILES MILLIONS	CAR TON MILES MILLIONS
UNITED STATES	81,632	19,258	489,401	950,998	23,751	67,697
EASTERN DISTRICT	32,680	11,032	286,036	441,996	11,892	32,186
SOUTHERN DISTRICT	15,560	3,063	86,251	164,377	4,270	11,564
WESTERN DISTRICT	33,392	5,164	117,115	344,625	7,589	23,947
NEW ENGLAND	2,461	869	15,199	27,926	495	1,628
Connecticut	468	206	4,186	3,174	67	208
Maine	647	163	3,217	10,343	186	680
Massachusetts	908	365	5,826	11,278	191	560
New Hampshire	61	29	603	602	11	34
Rhode Island	116	39	765	718	15	45
Vermont	262	67	603	1,811	24	101
TRUNK LINE	13,068	5,658	147,876	206,438	5,773	15,082
Delaware	271	109	1,911	4,704	80	260
Maryland	613	244	6,709	7,505	216	550
New Jersey	1,582	871	22,053	26,237	728	1,745
New York	4,958	1,382	29,757	63,013	1,583	4,835
Pennsylvania	5,644	3,053	87,446	104,979	3,167	7,692
CENTRAL	17,151	4,504	122,961	207,632	5,623	15,477
Illinois	4,305	1,060	27,955	41,590	1,080	3,240
Indiana	2,561	606	16,323	25,287	718	2,194
Michigan	2,404	356	8,607	21,843	494	1,420
Ohio	7,882	2,482	70,075	118,912	3,332	8,623
POCAHONTAS	2,902	949	41,208	33,463	1,218	2,719
Virginia	1,535	229	6,341	13,068	327	1,020
West Virginia	1,367	721	34,868	20,395	891	1,699
SOUTHEASTERN	12,658	2,114	45,042	130,914	3,052	8,845
Alabama	2,395	356	6,889	27,802	640	1,709
Florida	1,255	223	4,671	13,175	275	1,045
Georgia	1,956	339	6,364	21,761	458	1,446
Kentucky	1,630	243	7,208	16,135	497	1,202
Mississippi	1,523	326	6,761	15,305	345	1,011
North Carolina	1,911	323	5,795	15,236	312	1,014
South Carolina	484	58	1,134	4,959	97	287
Tennessee	1,504	247	6,219	16,541	428	1,132
WESTERN TRUNK LINE	15,528	2,803	64,511	157,297	3,391	10,823
Iowa	2,194	384	8,997	17,664	363	1,307
Kansas	2,608	485	10,508	28,424	666	2,040
Minnesota	2,358	362	9,810	26,576	626	1,752
Missouri	2,330	404	11,116	19,835	459	1,526
Nebraska	1,358	224	4,541	12,770	266	884
North Dakota	1,259	193	4,102	14,406	294	855
South Dakota	1,182	204	4,459	14,149	271	914
Wisconsin	2,239	546	10,976	23,473	446	1,546
SOUTHWESTERN	9,897	1,588	34,787	101,331	2,148	6,884
Arkansas	1,279	211	4,476	12,159	249	707
Louisiana	1,372	296	7,690	17,572	403	1,102
New Mexico	489	48	875	4,639	119	416
Oklahoma	2,273	336	8,110	22,972	510	1,597
Texas	4,484	697	13,635	43,989	866	3,063
PACIFIC NORTHWEST	3,516	438	11,137	43,157	1,036	3,099
Idaho	484	24	579	4,783	105	371
Montana	1,011	163	4,362	15,174	383	1,113
Oregon	605	30	652	6,780	147	481
Washington	1,171	206	5,145	12,760	303	845
Wyoming	245	15	400	3,660	98	289
PACIFIC SOUTHWEST	4,452	334	6,679	42,840	1,014	3,141
Arizona	215	19	163	1,972	44	176
California	2,658	144	2,952	26,200	578	1,848
Colorado	1,044	158	3,066	10,244	264	721
Nevada	151	5	159	1,233	31	97
Utah	383	7	339	3,191	98	298

Analysis 111.2 Road Service Units - Branch Line Way Trains - 1932

OPERATING DISTRICT	TRAIN MILES THOUSANDS	LOADED CARS THOUSANDS	NET TONS THOUSANDS	LOADED CAR MILES THOUSANDS	NET TON MILES MILLIONS	CAR TON MILES MILLIONS
UNITED STATES	45,634	10,785	300,648	353,459	8,896	23,096
EASTERN DISTRICT	11,637	5,327	163,699	103,974	3,337	7,419
SOUTHERN DISTRICT	7,525	1,643	51,916	55,161	1,668	4,054
WESTERN DISTRICT	26,472	3,816	85,033	194,324	3,891	11,624
NEW ENGLAND	1,957	450	7,763	12,159	217	598
Connecticut	150	47	748	794	13	46
Maine	1,038	183	3,493	6,846	122	301
Massachusetts	597	174	2,773	3,606	67	204
New Hampshire	101	29	550	594	11	32
Rhode Island	30	9	124	92	2	5
Vermont	40	10	74	227	3	10
TRUNK LINE	6,152	3,781	124,552	63,194	2,247	4,705
Delaware	173	52	1,135	1,247	28	84
Maryland	197	126	3,584	1,853	48	118
New Jersey	522	343	8,232	4,550	125	330
New York	1,197	609	17,605	15,683	608	1,106
Pennsylvania	4,062	2,651	93,995	39,861	1,438	3,068
CENTRAL	3,528	1,096	31,385	28,621	873	2,115
Illinois	1,338	282	8,220	9,595	272	698
Indiana	256	64	1,441	2,399	55	141
Michigan	935	130	3,749	5,852	166	407
Ohio	997	619	17,974	10,775	379	868
POCAHONTAS	1,584	630	31,125	16,809	753	1,475
Virginia	518	299	14,093	4,372	146	291
West Virginia	1,066	332	17,031	12,437	608	1,184
SOUTHERN	5,942	1,012	20,792	38,352	915	2,579
Alabama	787	135	3,506	6,081	158	406
Florida	1,493	223	4,927	8,601	218	677
Georgia	1,342	209	3,444	9,180	161	519
Kentucky	633	68	2,589	4,433	190	392
Mississippi	258	73	1,471	1,680	34	93
North Carolina	885	160	2,509	4,991	87	282
South Carolina	101	39	280	675	11	40
Tennessee	443	105	2,067	2,711	56	169
WESTERN TRUNK LINE	12,941	1,782	43,942	92,005	1,782	5,429
Iowa	2,176	279	9,495	12,953	243	756
Kansas	2,766	381	8,812	22,888	503	1,461
Minnesota	1,321	164	3,227	8,468	160	505
Missouri	1,528	234	6,937	13,224	204	596
Nebraska	2,244	261	5,628	15,271	289	958
North Dakota	1,246	149	3,235	9,778	205	566
South Dakota	527	76	1,676	2,703	51	169
Wisconsin	1,133	238	4,932	6,720	126	418
SOUTHWESTERN	6,670	1,205	25,513	51,690	1,105	3,316
Arkansas	811	170	3,053	5,770	128	393
Louisiana	786	181	3,891	4,665	105	300
New Mexico	555	92	2,874	4,541	129	316
Oklahoma	827	147	3,577	6,369	153	439
Texas	3,691	616	12,118	30,345	591	1,869
PACIFIC NORTHWEST	3,832	344	8,805	25,613	609	1,708
Idaho	855	22	563	4,906	114	363
Montana	643	115	2,829	4,527	107	288
Oregon	1,122	17	456	7,348	166	470
Washington	1,071	183	4,757	7,491	190	491
Wyoming	141	7	199	1,341	32	98
PACIFIC SOUTHWEST	3,030	484	6,773	25,016	395	1,170
Arizona	348	49	996	4,468	99	307
California	1,411	102	2,027	9,008	192	596
Colorado	881	325	3,541	9,531	56	137
Nevada	223	6	130	1,159	26	65
Utah	166	2	78	850	22	66

Analysis 111.3 Rail Way Train Performance - 1932

	UNITS PER MAIN LINE WAY TRAIN MILE					UNITS PER BRANCH LINE WAY TRAIN MILE				
	LOADED CAR MILES	TON MILES				LOADED CAR MILES	TON MILES			
		NET	EQUATED	CAR	GROSS		NET	EQUATED	CAR	GROSS
UNITED STATES	12	291	563	829	1,029	8	195	377	509	667
NEW ENGLAND	11	201	389	661	837	6	111	215	306	437
Connecticut	7	144	279	444	627	5	86	166	307	449
Maine	16	288	557	1,051	1,218	7	117	226	290	431
Massachusetts	12	211	408	617	808	6	113	219	342	453
New Hampshire	10	185	358	559	706	6	106	205	319	443
Rhode Island	6	127	246	390	560	3	46	89	180	314
Vermont	7	93	180	385	527	6	71	137	238	405
TRUNK LINE	16	442	855	1,154	1,395	10	365	706	765	974
Delaware	17	293	567	957	1,152	7	160	309	484	669
Maryland	12	352	681	897	1,155	10	245	474	597	781
New Jersey	17	460	890	1,103	1,331	9	240	464	632	848
New York	13	319	617	975	1,209	13	508	983	924	1,097
Pennsylvania	19	561	1,085	1,363	1,614	10	354	685	755	976
CENTRAL	12	328	634	902	1,122	8	248	480	600	764
Illinois	10	251	486	753	937	7	204	395	522	653
Indiana	10	280	542	857	1,053	9	216	418	552	698
Michigan	9	205	397	591	780	6	178	344	435	600
Ohio	15	423	818	1,094	1,351	11	380	735	870	1,083
POCAHONTAS	12	420	812	937	1,173	11	476	921	931	1,164
Virginia	9	213	412	664	868	8	282	545	561	754
West Virginia	15	652	1,261	1,243	1,516	12	570	1,103	1,111	1,363
SOUTHEASTERN	10	241	466	699	874	6	154	298	434	597
Alabama	12	267	516	713	883	8	201	389	516	671
Florida	11	219	424	832	1,048	6	146	282	454	642
Georgia	11	234	453	739	918	7	120	232	387	548
Kentucky	10	305	590	738	924	7	300	580	620	784
Mississippi	10	227	439	663	828	7	131	253	360	501
North Carolina	8	163	315	531	695	6	98	190	319	464
South Carolina	10	201	389	592	718	7	109	211	394	567
Tennessee	11	285	551	753	925	6	127	246	381	529
WESTERN TRUNK LINE	10	218	422	697	871	7	138	267	420	567
Iowa	8	166	321	595	753	6	112	217	348	508
Kansas	11	255	493	782	943	8	182	352	528	684
Minnesota	11	266	515	743	918	6	121	234	382	516
Missouri	9	197	381	655	845	9	134	259	390	513
Nebraska	9	196	379	651	815	7	129	250	427	573
North Dakota	11	233	451	680	860	8	164	317	454	606
South Dakota	12	229	443	773	975	5	96	186	321	468
Wisconsin	10	199	385	691	865	6	111	215	369	523
SOUTHWESTERN	10	217	420	696	867	8	166	321	497	651
Arkansas	10	195	377	553	627	7	158	306	485	584
Louisiana	13	294	569	803	942	6	133	257	381	491
New Mexico	9	244	472	851	1,120	8	232	449	568	763
Oklahoma	10	224	433	702	899	8	185	358	531	710
Texas	10	193	373	683	876	8	160	309	506	670
PACIFIC NORTHWEST	12	295	571	881	1,089	7	159	308	446	579
Idaho	10	216	418	766	915	6	134	259	424	507
Montana	15	379	733	1,101	1,350	7	167	323	448	636
Oregon	11	244	472	796	1,006	7	148	286	419	521
Washington	11	259	501	722	928	7	177	342	458	636
Wyoming	15	398	770	1,179	1,332	10	225	435	693	776
PACIFIC SOUTHWEST	10	228	441	705	921	8	130	251	386	529
Arizona	9	204	395	822	1,079	13	285	551	880	1,138
California	10	218	422	695	940	6	136	263	422	592
Colorado	10	252	487	691	839	11	63	122	155	220
Nevada	8	208	402	639	883	5	115	222	290	436
Utah	8	254	491	777	936	5	133	257	397	481

Analysis 111.4 Road Service Unit Costs - Main Line Way Trains - 1932

OPERATING DISTRICT	COST PER LOADED CAR MILE						
			MAINTENANCE				
	TOTAL	OVERHEAD	ROAD	POWER	CAR	TRAIN	STATION
UNITED STATES	$ .173	$ .034	$ .026	$ .020	$ .005	$ .084	$ .004
EASTERN DISTRICT	$ .163	$ .032	$ .021	$ .019	$ .004	$ .083	$ .004
SOUTHERN DISTRICT	.175	.034	.029	.020	.004	.084	.004
WESTERN DISTRICT	.184	.036	.032	.020	.005	.086	.005
NEW ENGLAND	$ .221	$ .043	$ .032	$ .020	$ .003	$ .115	$ .008
Connecticut	.330	.065	.037	.027	.004	.180	.017
Maine	.193	.038	.049	.020	.003	.079	.004
Massachusetts	.200	.039	.016	.019	.001	.118	.007
New Hampshire	.314	.062	.022	.019	.004	.195	.012
Rhode Island	.325	.064	.036	.018	.004	.188	.015
Vermont	.249	.049	.035	.016	.010	.129	.010
TRUNK LINE	$ .160	$ .031	$ .019	$ .021	$ .004	$ .080	$ .005
Delaware	.092	.018	.011	.012	.003	.046	.002
Maryland	.202	.039	.024	.022	.005	.104	.008
New Jersey	.152	.030	.020	.026	.002	.070	.004
New York	.188	.037	.020	.024	.006	.095	.006
Pennsylvania	.145	.029	.019	.019	.003	.072	.003
CENTRAL	$ .157	$ .031	$ .021	$ .017	$ .005	$ .079	$ .004
Illinois	.194	.038	.024	.016	.006	.105	.005
Indiana	.190	.037	.023	.017	.005	.103	.005
Michigan	.179	.035	.024	.019	.006	.090	.005
Ohio	.134	.026	.018	.016	.004	.067	.003
POCAHONTAS	$ .187	$ .037	$ .027	$ .023	$ .004	$ .093	$ .003
Virginia	.198	.039	.023	.024	.006	.102	.004
West Virginia	.180	.036	.030	.022	.003	.087	.002
SOUTHEASTERN	$ .172	$ .034	$ .030	$ .020	$ .004	$ .079	$ .005
Alabama	.148	.029	.028	.019	.003	.085	.004
Florida	.188	.036	.044	.030	.006	.068	.004
Georgia	.143	.028	.030	.017	.002	.062	.004
Kentucky	.186	.037	.022	.016	.004	.103	.004
Mississippi	.192	.038	.030	.017	.006	.091	.010
North Carolina	.213	.042	.029	.021	.005	.110	.006
South Carolina	.160	.032	.026	.022	.003	.073	.004
Tennessee	.172	.034	.032	.019	.004	.079	.004
WESTERN TRUNK LINE	$ .178	$ .035	$ .030	$ .021	$ .004	$ .083	$ .005
Iowa	.207	.040	.027	.019	.006	.110	.005
Kansas	.156	.030	.024	.018	.006	.075	.003
Minnesota	.201	.040	.037	.034	.002	.083	.005
Missouri	.204	.040	.031	.021	.006	.099	.007
Nebraska	.147	.028	.021	.016	.004	.075	.003
North Dakota	.162	.032	.032	.018	.002	.075	.003
South Dakota	.145	.028	.037	.018	.005	.054	.003
Wisconsin	.183	.036	.031	.015	.003	.092	.006
SOUTHWESTERN	$ .174	$ .034	$ .034	$ .019	$ .005	$ .077	$ .005
Arkansas	.182	.035	.029	.016	.010	.089	.003
Louisiana	.147	.028	.030	.016	.005	.063	.005
New Mexico	.214	.042	.031	.024	.006	.107	.004
Oklahoma	.169	.033	.036	.021	.003	.073	.003
Texas	.180	.035	.036	.020	.005	.077	.007
PACIFIC NORTHWEST	$ .178	$ .035	$ .032	$ .020	$ .005	$ .083	$ .003
Idaho	.197	.038	.038	.014	.004	.098	.003
Montana	.144	.028	.025	.019	.003	.067	.002
Oregon	.190	.037	.036	.025	.004	.085	.003
Washington	.214	.042	.042	.022	.003	.100	.005
Wyoming	.141	.026	.013	.015	.019	.066	.002
PACIFIC SOUTHWEST	$ .236	$ .046	$ .034	$ .023	$ .008	$ .120	$ .005
Arizona	.211	.041	.024	.020	.012	.109	.005
California	.245	.047	.038	.022	.008	.125	.005
Colorado	.180	.035	.026	.025	.004	.087	.003
Nevada	.491	.094	.062	.023	.023	.271	.018
Utah	.261	.051	.023	.021	.008	.154	.004

Analysis 111.5 Road Service Unit Costs - Branch Line Way Trains

OPERATING DISTRICT	COST PER LOADED CAR MILE						
	TOTAL	OVERHEAD	MAINTENANCE			TRAIN	STATION
			ROAD	POWER	CAR		
UNITED STATES	$ .236	$ .046	$ .026	$ .020	$ .005	$ .132	$ .007
EASTERN DISTRICT	$ .267	$ .053	$ .023	$ .023	$ .005	$ .155	$ .008
SOUTHERN DISTRICT	.258	.051	.034	.021	.004	.142	.006
WESTERN DISTRICT	.212	.041	.025	.017	.005	.118	.006
NEW ENGLAND	$ .350	$ .069	$ .033	$ .018	$ .004	$ .214	$ .012
Connecticut	.418	.082	.034	.023	.003	.253	.023
Maine	.266	.052	.040	.016	.003	.148	.007
Massachusetts	.465	.091	.021	.019	.005	.313	.016
New Hampshire	.482	.095	.024	.020	.004	.319	.020
Rhode Island	1.004	.198	.042	.021	.004	.683	.056
Vermont	.193	.037	.032	.014	.013	.077	.020
TRUNK LINE	$ .270	$ .053	$ .022	$ .027	$ .004	$ .156	$ .008
Delaware	.225	.044	.015	.017	.003	.139	.007
Maryland	.268	.052	.018	.018	.007	.161	.012
New Jersey	.299	.059	.021	.031	.002	.171	.015
New York	.225	.044	.025	.027	.004	.118	.007
Pennsylvania	.286	.056	.022	.027	.004	.169	.008
CENTRAL	$ .227	$ .044	$ .021	$ .017	$ .006	$ .133	$ .006
Illinois	.245	.047	.021	.014	.007	.149	.007
Indiana	.168	.033	.014	.010	.003	.104	.004
Michigan	.235	.046	.029	.019	.010	.124	.007
Ohio	.221	.043	.020	.021	.004	.129	.004
POCAHONTAS	$ .288	$ .057	$ .033	$ .021	$ .005	$ .168	$ .004
Virginia	.324	.065	.030	.030	.004	.187	.008
West Virginia	.276	.054	.034	.018	.005	.162	.003
SOUTHEASTERN	$ .245	$ .048	$ .035	$ .021	$ .004	$ .130	$ .007
Alabama	.218	.043	.027	.016	.003	.123	.006
Florida	.267	.052	.044	.034	.006	.124	.007
Georgia	.180	.036	.026	.015	.002	.094	.007
Kentucky	.246	.049	.024	.014	.004	.150	.005
Mississippi	.325	.064	.028	.012	.007	.202	.012
North Carolina	.278	.054	.032	.022	.007	.154	.009
South Carolina	.342	.067	.048	.020	.003	.193	.011
Tennessee	.312	.062	.069	.024	.003	.146	.008
WESTERN TRUNK LINE	$ .997	$ .039	$ .024	$ .017	$ .004	$ .108	$ .005
Iowa	.207	.041	.025	.020	.004	.111	.006
Kansas	.183	.036	.023	.018	.006	.096	.004
Minnesota	.226	.044	.028	.020	.003	.123	.008
Missouri	.166	.032	.015	.010	.004	.101	.004
Nebraska	.209	.041	.027	.017	.004	.114	.006
North Dakota	.176	.035	.026	.019	.002	.090	.004
South Dakota	.235	.045	.035	.018	.005	.126	.006
Wisconsin	.235	.046	.025	.016	.003	.137	.008
SOUTHWESTERN	$ .201	$ .039	$ .026	$ .017	$ .005	$ .107	$ .007
Arkansas	.217	.042	.019	.014	.010	.126	.006
Louisiana	.277	.054	.032	.018	.006	.156	.011
New Mexico	.167	.032	.025	.017	.008	.082	.003
Oklahoma	.210	.041	.023	.020	.004	.116	.006
Texas	.189	.037	.028	.017	.004	.096	.007
PACIFIC NORTHWEST	$ .279	$ .055	$ .036	$ .021	$ .004	$ .157	$ .006
Idaho	.289	.057	.024	.014	.005	.183	.006
Montana	.239	.047	.022	.020	.002	.144	.004
Oregon	.281	.056	.027	.022	.006	.163	.007
Washington	.312	.062	.065	.026	.003	.149	.007
Wyoming	.177	.034	.012	.014	.005	.109	.003
PACIFIC SOUTHWEST	$ .222	$ .043	$ .018	$ .017	$ .009	$ .130	$ .005
Arizona	.178	.035	.017	.015	.006	.101	.004
California	.282	.055	.021	.021	.013	.165	.007
Colorado	.170	.033	.014	.015	.003	.101	.004
Nevada	.220	.041	.022	.012	.027	.113	.005
Utah	.405	.076	.019	.018	.035	.250	.007

Analysis 113.1 Modernized Distributive Service - Main Line

OPERATING DISTRICT	CAR AVERAGES				COST PER CAR		
	AVERAGE LOAD TONS	AVERAGE HAUL (MILES)	NET TON MILES	NET TONS PER TRAIN	PRESENT WAY TRAINS*	MOTOR TRAINS#	HIGHWAY CONTAINER OPERATION ∅
UNITED STATES	25	49	1,225	291	$ 21.69	$ 15.71	$ 30.67
EASTERN	26	40	1,040	364	$ 20.13	$ 14.04	$ 26.59
SOUTHERN	28	54	1,512	274	19.20	17.87	43.80
WESTERN	13	67	871	227	27.20	16.88	22.65
NEW ENGLAND	17	32	544	201	$ 21.69	$ 10.40	$ 14.47
Connecticut	20	15	300	144	19.69	7.49	9.57
Maine	20	63	1,260	288	26.79	17.57	33.79
Massachusetts	16	31	496	211	20.78	9.98	13.39
New Hampshire	21	21	441	185	21.03	8.96	12.95
Rhode Island	20	18	360	127	20.56	8.12	11.48
Vermont	9	27	243	93	21.30	8.26	7.13
TRUNK LINE	26	36	936	442	$ 16.29	$ 13.20	$ 27.10
Delaware	18	43	774	293	16.45	12.93	20.52
Maryland	27	31	837	352	18.66	12.37	22.65
New Jersey	25	30	750	460	17.04	11.73	20.61
New York	22	46	1,012	319	21.04	14.43	26.05
Pennsylvania	29	34	986	561	17.44	13.94	25.56
CENTRAL	27	46	1,242	328	$ 22.08	$ 15.52	$ 31.98
Illinois	26	39	1,014	251	22.41	13.83	28.22
Indiana	27	42	1,134	280	22.77	14.68	30.45
Michigan	24	61	1,464	205	25.77	18.02	39.89
Ohio	28	48	1,344	423	21.23	16.54	33.85
POCAHONTAS	43	35	1,505	420	$ 15.16	$ 21.05	$ 38.55
Virginia	28	57	1,596	213	19.46	18.51	44.84
West Virginia	48	28	1,344	652	13.26	20.87	38.08
SOUTHEASTERN	21	62	1,302	241	$ 21.54	$ 17.57	$ 35.19
Alabama	19	78	1,482	267	22.49	20.50	36.13
Florida	21	59	1,239	219	21.99	16.94	34.31
Georgia	19	64	1,216	234	20.04	17.56	32.87
Kentucky	30	66	1,980	305	23.28	21.87	51.89
Mississippi	21	47	987	227	20.10	14.42	21.81
North Carolina	18	47	846	163	20.92	13.77	21.54
South Carolina	20	86	1,720	201	24.64	22.40	40.31
Tennessee	25	67	1,675	285	22.36	19.50	43.71
WESTERN TRUNK LINE	23	56	1,288	218	$ 26.57	$ 16.75	$ 36.61
Iowa	23	46	1,058	166	26.18	14.65	27.2[illegible]
Kansas	22	59	1,298	255	25.68	17.16	35.95
Minnesota	27	73	1,971	266	31.37	21.19	49.51
Missouri	28	49	1,372	197	26.56	16.76	34.25
Nebraska	20	57	1,140	196	24.95	16.31	32.10
North Dakota	21	75	1,575	233	28.64	20.30	39.07
South Dakota	22	69	1,518	229	26.62	19.26	39.06
Wisconsin	20	110	2,200	199	24.45	27.44	52.43
SOUTHWESTERN	22	64	1,408	217	$ 23.23	$ 18.21	$ 37.50
Arkansas	21	58	1,218	195	22.61	16.73	34.01
Louisiana	26	59	1,534	294	20.91	18.01	41.86
New Mexico	18	97	1,746	244	32.76	24.27	43.84
Oklahoma	24	68	1,632	224	23.67	19.49	42.28
Texas	20	63	1,260	193	23.53	17.57	33.79
PACIFIC NORTHWEST	25	99	2,475	295	$ 35.53	$ 26.22	$ 60.53
Montana	27	93	2,511	379	31.47	25.39	57.16
Washington	25	62	1,550	259	31.26	18.45	41.92
PACIFIC SOUTHWEST	20	128	2,660	228	$ 44.02	$ 31.22	$ 68.15
Arizona	9	108	972	204	35.49	24.66	23.68
Colorado	19	65	1,235	252	25.38	17.77	32.64

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* Present Road Costs Analysis 111.4, plus cost of intermediate yarding at junction with Main Line, Analysis 109.1 and one Terminal handling from Analysis 106.4.

# Line Cost per loaded car mile Analysis 111.4, plus container handling from Analysis 106.13.

∅ Based on Analysis 106.13.

Analysis 113.2 Modernized Distributive Service - Branch Line

OPERATING DISTRICT	CAR AVERAGES AVERAGE LOAD TONS	 AVERAGE HAUL (MILES)	 NET TON MILES	NET TONS PER TRAIN	COST PER CAR PRESENT WAY TRAINS *	 MOTOR TRAINS #	 HIGHWAY CONTAINER OPERATION ø
UNITED STATES	28	33	924	195	$ 20.90	$ 13.27	$ 24.21
EASTERN	31	20	620	287	$ 18.84	$ 11.56	$ 18.70
SOUTHERN	32	34	1,088	222	18.46	15.43	28.38
WESTERN	22	51	1,122	147	25.73	15.48	27.59
NEW ENGLAND	17	27	459	111	$ 24.04	$ 9.35	$ 13.27
Connecticut	16	17	272	86	21.65	7.75	8.95
Maine	19	37	703	117	24.58	11.89	20.05
Massachusetts	16	21	336	113	24.24	7.88	10.80
New Hampshire	19	20	380	106	24.59	8.32	11.44
Rhode Island	14	10	140	46	25.37	7.73	5.16
Vermont	7	23	161	71	19.15	9.00	5.89
TRUNK LINE	33	17	561	365	$ 16.97	$ 11.53	$ 18.51
Delaware	22	24	528	160	17.85	9.81	14.51
Maryland	28	15	420	245	16.40	9.34	13.37
New Jersey	24	13	312	240	16.41	7.94	10.81
New York	29	26	754	508	18.24	12.14	22.41
Pennsylvania	35	15	525	354	16.75	11.69	16.78
CENTRAL	29	26	754	248	$ 20.76	$ 12.14	$ 22.29
Illinois	29	34	986	204	23.13	13.94	25.56
Indiana	23	37	851	216	26.41	12.76	24.29
Michigan	29	45	1,305	178	25.42	16.41	33.95
Ohio	29	17	493	380	18.66	10.12	16.26
POCAHONTAS	49	27	1,323	476	$ 15.85	$ 20.85	$ 38.16
Virginia	47	15	705	282	12.90	15.68	22.50
West Virginia	51	37	1,887	570	18.50	25.73	53.79
SOUTHEASTERN	21	38	798	154	$ 20.15	$ 12.53	$ 22.47
Alabama	26	45	1,170	201	20.67	15.07	30.32
Florida	22	39	858	146	21.17	12.96	23.86
Georgia	16	44	704	120	18.81	12.71	18.46
Kentucky	38	65	2,470	300	26.83	27.49	65.27
Mississippi	20	23	460	131	18.36	9.17	12.89
North Carolina	16	31	496	98	19.57	10.32	13.39
South Carolina	7	17	119	109	16.76	5.55	5.11
Tennessee	20	26	520	127	18.93	9.80	15.35
WESTERN TRUNK LINE	25	52	1,300	138	$ 26.57	$ 16.35	$ 31.73
Iowa	34	46	1,564	112	26.20	19.54	30.19
Kansas	23	60	1,380	182	27.58	17.59	37.92
Minnesota	20	52	1,040	121	28.29	15.26	25.33
Missouri	30	57	1,710	134	25.94	19.80	48.22
Nebraska	22	59	1,298	129	28.80	17.16	35.95
North Dakota	22	66	1,452	164	28.10	18.63	38.13
South Dakota	22	36	792	96	24.93	12.90	22.92
Wisconsin	21	28	588	111	23.20	10.43	16.71
SOUTHWESTERN	21	43	903	166	$ 20.78	$ 13.58	$ 23.63
Arkansas	18	34	612	158	19.55	11.04	15.84
Louisiana	21	26	546	133	19.31	10.01	16.12
New Mexico	31	49	1,519	232	20.38	18.60	38.06
Oklahoma	24	43	1,032	185	21.29	14.24	27.40
Texas	20	49	980	160	21.48	14.63	24.70
PACIFIC NORTHWEST	26	74	1,924	159	$ 38.78	$ 21.18	$ 48.04
Montana	25	39	975	167	27.43	13.62	27.13
Washington	26	41	1,066	177	30.86	14.25	28.95
PACIFIC SOUTHWEST	14	52	728	130	$ 25.23	$ 13.95	$ 17.72
Arizona	20	91	1,820	285	29.85	23.45	47.03
California	20	88	1,760	136	38.71	22.82	46.19
Colorado	11	29	319	63	18.75	12.34	8.87

* Present Road Costs Analysis 111.5, plus cost of intermediate yarding at junction with Main Line, Analysis 109.1 and one Terminal handling from Analysis 106.4.

# Line Cost per loaded car mile Analysis 115.1, plus container handling from Analysis 106.13.

ø Based on Analysis 106.13.

Analysis 115.1 Shipper Traffic Service - Number of Replies

	UNITED STATES	NEW ENG-LAND	NEW YORK CITY	PHIL-ADEL-PHIA	OTHER TRUNK LINE	SOUTH EAST	CHI-CAGO	ST. LOUIS	OTHER CENTRAL FREIGHT	WEST-ERN TRUNK	SOUTH WEST-ERN	PACI-FIC COAST
NUMBER OF REPLIES	7,291	627	488	264	1,178	865	423	121	1,411	1,120	284	510
PERCENT OF REPLIES												
TRAFFIC SERVICE OBTAINED FROM:												
Firm traffic department	26%	25%	36%	25%	23%	19%	39%	30%	27%	27%	29%	25%
Firm officers, who perform other duties	26	33	31	28	22	21	32	30	28	23	24	29
Joint traffic bureau or association	10	4	2	5	6	15	7	7	9	18	14	7
Traffic expert, or other traffic bureau in general practice	9	6	7	11	7	11	7	17	9	11	7	11
Rate or claim bureau	5	3	6	4	5	6	8	4	5	7	2	2
Rely on railroad officers or agents	61	75	53	63	68	68	42	40	63	55	56	57
RAIL-PATRON CONTACTS												
Rail traffic executive officers call	33%	28%	26%	22%	32%	33%	27%	29%	34%	37%	48%	37%
Other railroad executives call	19	16	13	15	18	19	16	14	20	23	30	19
Rail operating officers call	17	11	11	12	18	21	12	10	20	20	24	17
Rail local agents keep in close contact	63	63	53	61	65	62	48	39	68	66	70	63
Rail local agents furnish rates, tracing, etc.	65	75	56	72	69	68	54	40	69	61	58	64
Commercial agents of local lines call	61	56	59	50	47	70	65	74	67	65	74	55
Commercial agents of foreign lines, (i.e. Railroads not serving the city) call	57	60	45	42	49	63	44	48	62	61	65	54
FOREIGN LINE CALLS												
Foreign line calls are helpful	36%	40%	36%	33%	32%	31%	35%	35%	38%	39%	34%	32%
Foreign line calls are useless	21	19	13	14	18	26	16	13	22	22	25	25
Foreign line calls affect routing	23	22	20	21	18	21	22	19	25	28	32	25
OFF LINE AGENCY SERVICING												
Information about rates, classification, etc.	11%	13%	16%	14%	8%	7%	17%	9%	11%	11%	10%	10%
Assistance in securing rate changes or adjustments	8	7	8	6	6	8	11	8	10	9	9	7
Information about special tariff privileges, reconsignments, etc.	7	5	9	6	5	5	9	6	8	7	7	6
Information about schedules, service, etc.	17	20	19	16	14	13	17	11	20	18	15	14
Information as to terminal service or deliveries at other end	15	14	20	12	12	12	14	17	17	17	13	14
Information of market or crop conditions	3	1	1	1	2	4	2	2	3	3	2	3
Tracing Shipments	20	20	22	20	16	16	22	17	23	24	19	16
Handling reconsignments	5	3	7	6	4	5	6	5	5	5	6	3
Handling of complaints about rates or service, claims, etc.	8	7	9	7	7	7	10	8	9	10	10	7
ROUTING:												
Routing largely influenced by solicitation	22%	20%	20%	21%	19%	20%	25%	26%	21%	28%	27%	26%
Routing largely influenced by friendship	11	5	8	5	8	14	8	6	8	17	25	13
Routing necessary to control reconsignment, etc.	11	8	10	8	9	11	10	14	11	14	21	13
Routing to compel good service	63	68	67	62	57	58	65	60	72	61	56	53
Routing beyond initial carrier unnecessary	8	7	9	10	7	9	7	5	8	8	7	7
Routing between initial and final carrier unnecessary	7	7	7	7	6	8	7	2	8	6	7	6
Routing privilege not of substantial value	17	26	20	21	19	18	17	7	16	13	15	15

SECTION 115. ROUTING

Analysis 115.2 Shipper Traffic Service - Tonnage

	UNITED STATES	NEW ENG-LAND	NEW YORK CITY	PHIL-ADEL-PHIA	OTHER TRUNK LINE	SOUTH EAST	CHI-CAGO	ST. LOUIS	OTHER CENTRAL FREIGHT	WEST-ERN TRUNK	SOUTH WEST-ERN	PACI-FIC COAST
REGIONAL TONNAGE DISTRIBUTION	100%	4%	6%	4%	16%	13%	7%	1%	19%	13%	10%	6%
PERCENTAGE OF TONS												
TRAFFIC SERVICE OBTAINED FROM:												
Firm traffic department	68%	32%	68%	93%	52%	34%	92%	52%	71%	59%	48%	56%
Firm officers, who perform other duties	13	13	12	4	15	11	3	25	13	16	14	15
Joint traffic bureau or association	5	4	6	15	3	4	6	2	3	11	3	5
Traffic expert, or other traffic bureau in general practice	4	2	1	2	3	5	1	4	3	6	2	8
Rate or claim bureau	2	1	3	3	1	1	1	-	2	3	6	1
Rely on railroad officers or agents	18	24	17	7	33	24	5	3	15	16	5	19
RAIL-PATRON CONTACTS												
Rail traffic executive officers call	73%	24%	78%	38%	58%	39%	88%	50%	78%	70%	54%	56%
Other railroad executives call	54	20	67	32	39	28	98	33	59	56	41	31
Rail operating officers call	51	16	54	29	45	31	79	31	58	53	32	26
Rail local agents keep in close contact	61	35	63	32	56	36	97	35	66	66	30	66
Rail local agents furnish rates, tracing, etc.	35	20	27	22	28	32	61	10	49	35	14	31
Commercial agents of local lines call	81	48	92	39	60	50	94	51	91	75	53	60
Commercial agents of foreign lines (i.e. Railroads not serving the city) call	80	44	77	34	64	50	93	52	89	74	54	67
FOREIGN LINE CALLS												
Foreign line calls are helpful	65%	33%	88%	38%	51%	31%	90%	42%	68%	65%	43%	45%
Foreign line calls are useless	9	7	4	1	8	12	1	6	9	12	9	21
Foreign line calls affect your routing	42	13	77	67	36	24	66	6	39	45	35	37
OFF LINE AGENCY SERVICING												
Information about rates, classification, etc.	26%	12%	44%	18%	26%	15%	56%	8%	21%	21%	8%	27%
Assistance in securing rate changes or adjustment	27	8	37	17	27	16	55	13	26	26	7	21
Information about special tariff privileges, reconsignments, etc.	21	6	34	15	30	17	12	7	12	23	11	26
Information about schedules, service, etc.	36	16	50	25	36	27	40	7	39	41	13	22
Information as to terminal service or deliveries at other end	36	10	67	66	36	26	51	30	24	40	10	23
Information of market or crop conditions	7	4	1	-	17	10	2	2	3	5	5	2
Tracing Shipments	43	20	70	68	41	22	65	30	39	53	18	29
Handling reconsignments	22	9	42	60	16	17	38	27	15	20	3	9
Handling of complaints about rates or service, claims, etc.	26	11	50	17	15	17	34	7	26	40	12	22
ROUTING												
Routing largely influenced by solicitation	27%	20%	29%	10%	35%	15%	36%	29%	25%	22%	29%	27%
Routing largely influenced by friendship	11	11	16	1	5	14	5	24	5	22	12	10
Routing necessary to control reconsignment, etc.	32	12	49	5	31	12	56	10	33	27	26	37
Routing to compel good service	71	35	86	58	60	42	81	29	83	66	47	50
Routing beyond initial carrier unnecessary	4	11	1	1	4	7	-	1	3	2	2	2
Routing between initial and final carrier unnecessary	3	3	8	-	4	6	-	4	2	2	1	1
Routing privilege not of substantial value	4	5	8	3	4	4	5	1	5	2	1	2

TOTAL TONNAGE - 290,202,833

SECTION 116. INTERCHANGE COST

Analysis 116.1 Rail Yard Unit Cost of Intercarrier Movements - 1932

DISTRICT OR TERRITORY	ALL INTERCHANGES TOTAL CARS (000)	ALL INTERCHANGES UNIT COST	TERMINAL INTERCHANGES TOTAL CARS (000)	TERMINAL INTERCHANGES UNIT COST	LINE INTERCHANGES TOTAL CARS (000)	LINE INTERCHANGES UNIT COST	INTERMEDIATE INTERCHANGE TOTAL CARS (000)	INTERMEDIATE INTERCHANGE UNIT COST
			COST PER INTERCHANGE HANDLING					
UNITED STATES	50,019	$ 6.51	12,250	$ 11.78	35,167	$ 4.80	2,602	$ 4.88
EASTERN	29,267	6.22	6,072	11.58	21,657	4.83	1,538	4.68
SOUTHERN	6,219	6.16	1,463	11.27	4,643	4.52	113	7.23
WESTERN	14,533	7.25	4,716	12.20	8,866	4.86	951	4.90
NEW ENGLAND	1,825	4.10	212	9.68	1,613	3.37	-	-
TRUNK LINE	11,247	5.80	1,239	12.46	9,958	4.97	50	6.83
CENTRAL	16,194	6.75	4,620	11.43	10,086	4.93	1,488	4.61
POCAHONTAS	1,794	4.95	273	10.74	1,483	3.82	38	7.75
SOUTHEASTERN	4,425	6.65	1,190	11.40	3,161	4.86	74	6.96
WESTERN TRUNK LINE	8,647	5.05	3,105	12.29	4,652	4.89	890	4.40
SOUTHWESTERN	3,457	5.92	996	9.92	2,429	4.29	32	4.93
PACIFIC NORTHWEST	660	11.71	241	14.77	415	7.54	4	10.59
PACIFIC SOUTHWEST	1,770	7.54	375	15.89	1,371	5.00	24	22.15*
			COST PER CAR INTERCHANGED					
UNITED STATES	24,116	$ 10.78	6,533	$ 22.09	17,583	$ 9.60	1,301	$ 9.76
EASTERN	14,010	10.78	3,182	22.10	10,828	9.66	769	9.38
SOUTHERN	3,091	9.78	769	21.44	2,322	9.04	56	14.46
WESTERN	7,015	11.22	2,582	22.29	4,433	9.72	475	9.80
NEW ENGLAND	915	7.04	108	18.97	807	6.74	-	-
TRUNK LINE	5,736	10.26	757	20.39	4,979	9.94	25	14.14
CENTRAL	7,359	11.65	2,316	22.80	5,043	9.86	744	9.22
POCAHONTAS	893	8.53	152	19.34	741	7.64	19	15.50
SOUTHEASTERN	2,198	10.29	618	21.96	1,580	9.72	37	13.92
WESTERN TRUNK LINE	4,007	11.84	1,681	22.70	2,326	9.78	445	8.80
SOUTHWESTERN	1,761	8.94	547	18.07	1,214	8.58	16	9.86
PACIFIC NORTHWEST	341	15.00	133	26.61	208	15.08	2	21.18
PACIFIC SOUTHWEST	907	11.54	221	26.99	686	10.00	12	44.30*

* These costs were due to an average of 15 day car detention on intermediate interchanges.

Analysis 116.2 Rail Yard Unit Cost of Intercarrier Movements - Eastern District - 1932

DISTRICT OR TERRITORY	ALL INTERCHANGES		COST PER INTERCHANGE HANDLING				INTERMEDIATE INTERCHANGE	
			TERMINAL INTERCHANGES		LINE INTERCHANGES			
	TOTAL CARS (000)	UNIT COST	TOTAL CARS (000)	UNIT COST	TOTAL CARS (000)	UNIT COST	TOTAL CARS (000)	UNIT COST
UNITED STATES	50,019	$ 6.51	12,250	$ 11.78	35,167	$ 4.80	2,602	$ 4.88
EASTERN DISTRICT	29,267	$ 6.22	6,072	$ 11.58	21,657	$ 4.83	1,538	$ 4.68
NEW ENGLAND	1,825	$ 4.10	212	$ 9.66	1,613	$ 3.37	-	-
Boston	95	11.07	93	11.18	2	4.84	-	-
Bridgeport	-	-	-	-	-	-	-	-
Fall River	-	-	-	-	-	-	-	-
Hartford	-	-	-	-	-	-	-	-
Lowell	58	4.04	2	13.31	56	3.65	-	-
Lynn	-	-	-	-	-	-	-	-
New Bedford	-	-	-	-	-	-	-	-
New Haven	-	-	-	-	-	-	-	-
Providence	4	4.98	1	7.71	3	16.46	-	-
Springfield	128	4.23	15	8.42	113	3.66	-	-
Worcester	266	3.49	28	11.45	238	2.56	-	-
Majors	958	3.53	41	7.41	927	3.36	-	-
Minors	307	4.09	32	7.05	275	3.75	-	-
TRUNK LINE	11,247	$ 5.80	1,239	$ 12.46	9,958	$ 4.97	50	$ 6.83
Albany	53	11.21	31	15.06	22	5.95	-	-
Baltimore	101	8.56	72	10.20	29	4.58	-	-
Buffalo	1,194	7.56	323	13.73	858	5.27	13	5.40
Erie	52	11.28	24	15.21	27	8.09	1	4.57
New York	1,241	10.26	89	15.50	1,144	9.87	8	6.14
Paterson	-	-	-	-	-	-	-	-
Philadelphia	523	6.11	58	10.45	459	5.48	7	11.81
Pittsburgh	303	8.63	139	11.80	164	5.92	-	-
Reading	*	6.58	-	-	*	6.58	-	-
Rochester	49	10.58	22	15.82	26	6.59	1	25.45
Scranton	167	5.62	3	23.45	164	5.33	-	-
Syracuse	28	7.44	9	10.94	19	5.66	-	-
Trenton	1	9.34	*	9.83	*	9.19	-	-
Utica	40	5.24	10	9.65	28	3.69	2	3.25
Washington	42	14.98	9	16.22	33	14.62	-	-
Wilmington	30	9.03	13	13.53	17	5.66	-	-
Majors	4,183	4.72	283	10.96	3,885	4.26	14	6.59
Minors	3,241	4.05	153	11.55	3,083	3.68	4	6.07
CENTRAL	16,194	$ 6.75	4,620	$ 11.43	10,086	$ 4.93	1,488	$ 4.61
Akron	118	7.04	89	8.26	29	3.32	-	-
Canton	19	11.76	15	13.85	4	4.72	-	-
Chicago	5,142	8.36	2,141	11.53	1,806	7.69	1,195	3.72
Cincinnati	1,271	6.17	204	11.63	1,039	5.02	28	9.18
Cleveland	366	12.40	231	15.04	116	7.47	19	10.51
Columbus	933	4.86	80	10.69	853	4.31	-	-
Dayton	68	5.67	15	10.54	53	4.25	-	-
Detroit	472	9.79	291	11.58	165	5.16	16	7.08
Evansville	135	6.40	38	12.15	93	4.11	4	4.85
Flint	14	9.05	14	9.05	-	-	-	-
Fort Wayne	30	10.33	14	12.61	16	8.38	*	6.45
Grand Rapids	29	11.75	19	14.20	9	6.37	1	14.44
Indianapolis	214	8.35	109	12.06	105	4.48	-	-
Milwaukee	155	11.30	69	12.94	85	10.01	1	7.29
Peoria	409	4.32	118	7.04	168	2.54	122	4.13
South Bend	41	6.03	11	13.31	25	3.26	5	3.42
Toledo	1,128	5.59	172	11.45	906	4.36	50	7.85
Youngstown	493	5.45	51	16.69	442	4.13	*	24.22
Majors	2,625	5.70	646	10.27	1,939	3.84	40	22.11
Minors	2,531	4.82	291	11.21	2,233	3.99	6	4.65

* Less than 500 cars.

Analysis 116.3 Rail Yard Unit Cost of Intercarrier Movements - Southern and Western Districts - 1932

	ALL INTERCHANGES		COST PER INTERCHANGE				INTERMEDIATE INTERCHANGES	
			TERMINAL INTERCHANGES		LINE INTERCHANGES			
	TOTAL CARS (000)	UNIT COST	TOTAL CARS (000)	UNIT COST	TOTAL CARS (000)	UNIT COST	TOTAL CARS (000)	UNIT COST
UNITED STATES	50,019	$ 6.51	12,250	$11.78	35,167	$ 4.90	2,602	$ 4.88
SOUTHERN DISTRICT	6,219	6.16	1,463	11.27	4,643	4.52	113	7.23
WESTERN DISTRICT	14,533	7.25	4,716	12.20	8,866	4.86	951	4.90
POCAHONTAS	1,794	4.95	273	10.74	1,483	3.82	38	7.75
Norfolk	248	8.86	87	12.26	161	7.02	*	17.66
Richmond	322	4.94	78	10.22	226	2.88	18	8.10
Majors	872	5.20	90	10.84	762	4.48	20	7.36
Minors	354	1.61	19	5.43	334	1.39	*	1.65
SOUTHEASTERN	4,425	6.65	1,190	11.40	3,161	4.86	74	6.96
Atlanta	347	6.62	90	11.00	256	5.07	1	9.00
Birmingham	230	5.89	52	10.04	178	4.67	-	-
Chattanooga	98	8.43	39	13.39	58	4.47	1	33.55
Jacksonville	97	9.31	50	10.66	47	7.84	*	10.40
Knoxville	40	8.43	13	12.55	27	6.34	*	10.45
Louisville	331	8.81	112	14.24	212	5.95	7	8.07
Memphis	345	7.38	157	10.83	187	4.49	1	3.91
Miami	2	10.55	1	15.41	1	8.80	-	-
Nashville	86	7.07	19	12.29	67	5.62	*	16.27
New Orleans	263	10.87	153	11.90	102	9.76	8	5.07
Tampa	7	10.01	4	13.82	3	4.87	-	-
Majors	1,431	7.33	369	12.38	1,009	5.53	53	6.45
Minors	1,148	3.65	130	6.42	1,015	3.29	3	5.08
WESTERN TRUNK LINE	8,647	5.05	3,105	12.29	4,652	4.89	890	4.40
Denver	226	9.70	83	14.02	134	7.14	9	8.24
Des Moines	128	12.07	49	22.04	76	6.01	3	5.36
Duluth	174	16.18	135	17.98	35	10.10	3	8.05
Kansas City	1,680	7.17	599	11.58	1,065	4.70	16	6.11
Minneapolis	494	11.34	250	16.72	219	5.75	25	6.53
Omaha	985	7.45	241	15.66	716	4.74	28	5.87
St. Paul	266	7.16	97	9.30	134	6.06	35	5.45
St. Louis	2,463	5.78	845	9.57	905	3.62	713	4.05
Wichita	51	7.84	29	9.91	20	5.21	2	4.28
Davenport	49	10.68	29	14.72	19	4.75	1	5.79
Majors	1,226	9.52	546	12.88	647	6.91	33	4.96
Minors	904	5.01	201	9.27	680	3.73	23	5.62
SOUTHWESTERN	3,457	5.92	996	9.92	2,429	4.29	32	4.93
Dallas	111	8.44	71	10.00	38	5.54	2	8.13
El Paso	171	3.63	42	5.39	128	3.05	1	1.88
Fort Worth	343	6.68	142	9.74	195	4.54	6	3.31
Houston	136	9.25	64	13.49	71	5.54	1	1.74
Little Rock	21	8.96	17	10.06	4	4.19	-	-
Oklahoma City	83	8.20	53	10.16	30	4.72	*	2.95
San Antonio	45	8.32	20	11.42	25	5.84	-	-
Tulsa	51	6.11	29	7.56	22	4.24	*	4.40
Majors	1,541	5.76	419	10.17	1,107	4.12	15	3.22
Minors	953	5.16	137	9.19	808	4.43	8	9.68
PACIFIC NORTHWEST	660	11.71	241	14.77	415	7.54	4	10.59
Portland	106	12.37	54	14.40	51	10.26	1	10.75
Seattle	59	13.01	45	13.82	14	10.52	-	-
Spokane	96	9.11	40	12.59	54	6.39	2	13.63
Tacoma	27	14.36	26	14.77	1	6.22	*	13.74
Majors	191	9.10	50	17.20	140	6.24	1	6.10
Minors	180	9.10	26	15.90	154	7.97	*	7.84
PACIFIC SOUTHWEST	1,770	7.54	375	15.89	1,371	5.00	24	22.15
Long Beach	3	13.30	3	13.30	-	-	-	-
Los Angeles	196	14.48	104	18.57	83	6.91	9	37.05
Salt Lake City	183	7.08	14	13.52	167	6.26	2	28.35
Oakland	47	14.88	38	15.35	4	11.52	5	14.18
San Diego	10	9.03	3	14.23	7	7.06	-	-
San Francisco	96	14.65	79	15.73	11	7.83	6	12.99
Majors	742	6.19	63	21.23	678	4.78	*	6.66
Minors	493	4.84	70	8.17	421	4.28	2	2.91

* Less than 500 cars

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